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COMPUTERWORLD

DEC faces wary users with revised game plan

By Melioda-Carol Ballou
LAS VEGAS

■ Digital Equipment Corp. and Digital Equipment Computer Users Society officials will help clarify ongoing changes in DEC marketing, product availability and personnel to users attending this week's DEC user group meeting. Meanwhile, the conference seminar program is being altered as DECUS officials attempt to substitute speakers and topics for departing DEC officials and products.

One constant amid the upheaval, however, will be a focus on making the transition to DEC's Alpha AXP platforms. According to DEC sources, nearly 1,000 platforms have been sold in the first month since the products began shipping. And with ship schedules of 400 applications by March and 500 more by the end of next year, the push to the new technology may be starting to take hold.

But users in the know are bracing for shifts by DEC that, while crucial to the company's survival, could take a toll on customer confidence.

Prior to the conference here, DEC officials announced the approval of a channels marketing plan, which will ultimately place the major re-

DEC, *page 16*

On DEC

Facts about DECUS' U.S. chapter

Founded: 1961.

Membership: 52,000.

Charter: Forum for discussion of issues relevant to DEC users.

Organization: Board of directors, management committee, special interest groups, local user and working groups.

Select product areas: DECUSserve user network, source code library of discontinued DEC products and seminars unit.

Open systems advocates push for better answers

By Maryfran Johnson
WASHINGTON, D.C.

■ Senior executives from more than 100 corporations and government agencies gathered last week to strengthen the business case for open systems and to kick-start the stodgy standards process that many said bogs down their migration plans.

The management and control of distributed systems took center stage at the X/Open Co.'s Xtra '92 World Congress, where users singled out nearly 30 requirements for computing standards that their businesses will need sooner rather than later.

Robert M. White *urges user participation*

Among them were a common transaction processing environment, an open systems repository model, distributed security, system and network administration and several aspects of data management over distributed networks.

"Open systems is not improving nearly as fast as it needs to," said Mark Schmidt, vice president of information technology and communications at Wal-Mart Stores, Inc. in Bentonville, Ark., which has more than 3,500 Unix systems serving its 2,000 retail outlet stores.

Schmidt criticized the open system standards process for its slow pace, lack of precision and politicized vendor squabbles. "The systems management area has multiple vendors now and is neither as open nor as standard as the open systems hype would have everyone believe," he said sharply. "That slows us down, and I believe X/Open can provide a great deal of leadership in this area."

At the meeting, X/Open released its first worldwide survey of suppliers' plans for open systems (see chart page 8), in which 65 system and software vendors indicated both product plans for and commitment to standards in areas such as on-line transaction processing.

While users were comforted by the strong vendor commitment (88%) to the Open Software Foundation's Distributed Computing Environment, several users expressed dismay at the paucity of product plans in areas such as distributed security and object management services.

"Users must help create a unified market for standard products," said Robert M. White, undersecretary for technology at the U.S. Department of Commerce.

He and other users urged the quicker development and market acceptance of standards through industry consortia and user alliances. "We need a mix of de facto, formal and market standards to meet the needs of open systems," White said.

The Unix operating system also needs to over-

Open systems, *page 8*

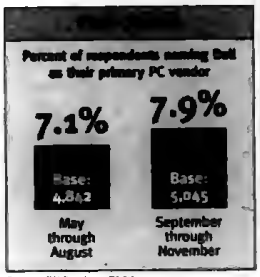
Success breeds closer scrutiny

Dell hits the big time

By Michael Fitzgerald
AUSTIN, TEXAS

Dell Computer Corp. has had to dodge so many bullets in its dash to the PC industry's upper echelon that it could start a second career as a commando. But while Dell has avoided serious injury so far, some analysts question whether the company has an arsenal potent enough to keep competing against larger, more powerful rivals.

By many accounts, Dell is now in a class with personal computing's Big Three — the IBM PC Co., Apple Computer, Inc. and Compaq Computer Corp. Many large organizations — including Amoco Corp., 3M Co. and the Federal Deposit Insurance Corp. — have put Dell on their approved purchase lists.



Source: CW Database Division

"We certainly see them as a first-tier vendor," said John Biglin, sys-

Dell, *page 14*

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Pressured COS overhauls

Users frustrated by poor OSI, TCP/IP interoperability

By Elisabeth Horwitt
MCLEAN, VA.

The Corporation for Open Systems, a major focal point of global networking standards efforts, this week will start laying out short- and long-term objectives for a massive reorganization that aims to better serve users' interoperability and migration needs.

COS' reorganization, slated to go into effect in January, is based on a survey "in which members told us they wanted to tackle the same objectives but from more of a business, as opposed to technical, perspective," a COS spokeswoman said.

Indeed, the reorganization responds to a high level of frustration among members and affiliates, which include manufacturing, aerospace, energy, utility and government-sector users who remain committed to Open Systems Interconnect as an industry standard. A major focus of user ire is the escalating standards wars between Transmission Control Protocol/Internet Protocol and OSI.

"I think users are saying 'I'm mad as hell and I'm not going to take it anymore,'" said Jerry Johnson, standards analyst for the state of Texas' department of information resources in Austin. "We don't need any more standards holy wars where everybody loses."

"COS is creating a user/vendor environment to address issues

COS, *page 16*

Bridging the gap

OSI users want TCP/IP interoperability because of the following:

- Standards bodies are taking forever to finalize standards.
- Most products are based on the 1984 version of OSI.
- Products based on the 1988 version of OSI are expensive, buggy and do not always interoperate with older OSI products.

Executive Briefing

A comprehensive guide to the week's news

OPEN SYSTEMS

Open systems users are clamoring for speedier standards development in areas such as systems and network management, distributed security and data management. Building a stronger business case for open systems was a key theme of X/Open's Xtra '92 World Congress last week in Washington, D.C. *Page 1*

The Corporation for Open Systems is reorganizing to get closer to users' interoperability needs. *Page 1*

If you sit back and take what vendors and standards bodies dish out, you are probably going to get a lot that doesn't serve your purposes. But according to Elaine Bond, if users will rouse themselves, vendors will listen. *Page 32*

SECURITY/DISASTER RECOVERY

playing it SAFE

The Software Publishers Association gets 20 to 30 tips a day about the use of pirated software. Your company could be next. Guilty or not, it helps to know what to expect. *Page 108*

Growing use of client/server architecture, electronic mail, open systems and laptop computers, along with downsizing, have made LAN security tougher than ever. IS managers are responding with an innovative mix of technology, policy and recentralization. *Page 87*

Jingle bells: Your PC may pick up a Christmas virus this month. *Page 57*

The use of computers to carry out telephone fraud continues to grow as a threat to large organizations. *Page 71*

MANAGEMENT

IS chiefs can influence business decisions about outsourcing, corporate funding and re-engineering by cluing executives in to how technology affects business performance. That means IS managers need to know which value measurement technique to use in which business situation. *Page 95*

Noranda, an $8.5 billion natural resources firm based in Toronto, tells about how it uses friendly persuasion to gain buy-in from 1,000 IS professionals in 60 operating companies for a new set of corporate software standards. *Page 6*

If you're overwhelming your users with computerspeak, you could be making yourself obsolete. IS professionals need to look past technology and focus on the image they present to their companies and users by communicating more clearly. *Page 101*

DOWNSIZING

A shrink-to-fit software conversion program at Levi Strauss has enabled the jeans maker to start loading a stock management program on HP minicomputers, which will share duties with the IBM mainframe on which the software already resides. *Page 8*

IMAGING

A document imaging system will aid Resolution Trust this week as it holds the largest real estate auction of its kind. *Page 20*

Groupware

Microsoft's Windows for Workgroups receives praise from reviewers and early users for ease of use and installation, but some glitches are reported, and certain features aren't as robust as they could be. *Page 63*

PCs

Dell's giant new product rollout and recent sales surge have it gaining on Compaq and IBM, but some observers say the company is headed for a fall. *Page 1*

Users are finding several Apple products — including the PowerBook 180 and 145 portables, the newly introduced Performa 600 and the high-end Quadra 950 — in short supply. *Page 4*

Lotus ships its latest 1-2-3 for DOS and considers streamlining its DOS spreadsheets. *Page 4*

Compaq ups the service wars with a new three-year warranty, but few competitors expect to follow suit. *Page 14*

The price plunge in 486 PCs may slow as Intel heads AMD in court and delays AMD's push into the 486 market by at least six months. *Page 15*

The next big step for Ryder will come when it implements a nationwide network of PCs to automate its trucking dealerships. *Page 57*

Enterprise networks

The distinction between wireless and wired communications will blur in the mid-'90s and could cause heightened competition for traditional network services, said a recent Deloitte & Touche survey. *Page 73*

Network Peripherals, Inc. cuts prices on its FDDI adapter cards and introduces a four-port concentrator. *Page 12*

The Interop show just doesn't have the same feeling it had before the marketing folks bumped the working technical people into the shadows, according to *Computerworld*'s Elisabeth Horwitt. *Page 71*

Big-name vendors are lining up behind start-up Isocor's effort to bring X.400 traffic to international dial-up telephone networks. *Page 73*

Local-area networks

Compatibility labs such as the one run by LANDA at Comdex could make it easier for users to match LAN equipment and software. *Page 65*

PCMCIA cards offer users some interesting possibilities, especially for portables. *Page 28*

People costs — such as administration and support — represent the greatest part of the LAN bill. *Page 65*

Users of IBM's expired OfficeVision/LAN product are making the move to Lotus Notes and encountering few problems along the way. But there weren't that many OfficeVision/LAN users to begin with. *Page 4*

Outsourcing

Advantis, the IBM/Sears network outsourcing venture, wins a major contract, but the customer had already chosen IBM anyway. *Page 12*

The right price was a key reason IBM beat out Genix Corp. at the last minute on an outsourcing deal with BICC Cables Corp. *Page 78*

Don't expect the outsourcer lion to lie down with the user lamb anytime soon, says Executive Editor Paul Gillin. *Page 32*

Data management

Borland is lining up other vendors to support its proposal for IDAPI, a new API optimized to reach relational databases as well as flat-file PC databases. *Page 60*

DEC optimizes Rdb for Alpha and seeks to range from the restrictions of proprietary RDBMSs. *Page 77*

Dirty data is a big and growing problem, and IS managers don't seem willing to face up to what is needed to fix it, says Alastair McKeating, a data architect at Prudential Assurance in Ontario. Replacing equipment isn't the answer; that's like hoping a new set of clubs will improve your golf game. *Page 33*

Careers

Thanks to the tourism industry's heavy reliance on technology, some promising job possibilities can be found in theme parks, car rental companies, hotels and motels. *Page 103*

Midrange systems

DEC's users meeting in Las Vegas this week will have to cope with a host of changes. DEC will explain its new focus on third-party sales channels, personnel changes and its decision to discontinue some products. **1**

Hewlett-Packard is embarking on a two-pronged pricing plan for its minicomputer software, moving away from processor-based pricing. **77**

Application development

Pragmatic business concerns are driving interest in a horde of new workbenches supporting cross-platform and client/server application development. **83**

A bumper crop of PC development tools has sprouted for Microsoft's Windows NT and IBM's OS/2. **83**

SunPro introduces a suite of graphical code management tools that enable software developers to work more easily in large or graphically dispersed workgroups. **24**

Large systems

Amdahl denies there are severe technical problems with its new 5995M IBM-compatible mainframes, although the $1.7 billion firm acknowledged that flawed channel interface boards caused outages at some 5995M sites this fall. **10**

The State of Michigan Department of Social Services looks for greater accuracy and efficiency and ease of use in a system that is being assembled for it by Unisys. **84**

Industry

The U.S. and its allies say they will relax curbs on the export of advanced computers to the former Soviet Union. **117**

Client/server

D&B Software plans to lay off 400 employees as it streamlines its ranks in preparation for a client/server and Unix push.

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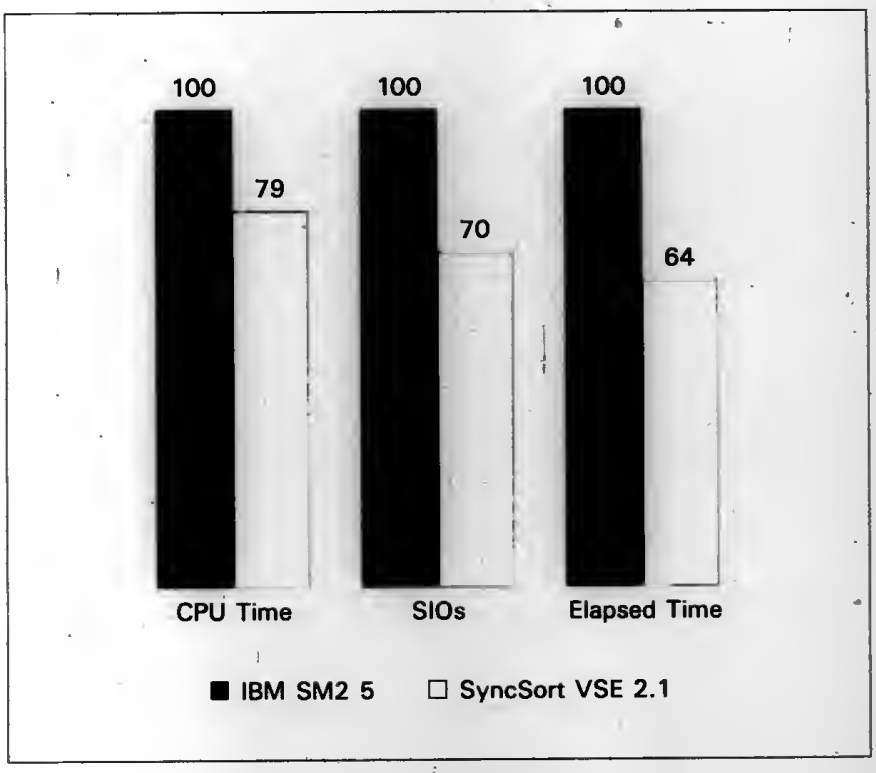

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OfficeVision users take Notes

By Rosemary Cafasso

■ Early users of the IBM/Lotus Development Corp. Notes exchange program have kissed OfficeVision/LAN 2 goodbye and are not looking back.

The customers report smooth migrations to the Lotus software from the now-defunct IBM office automation platform, in part because they had little more than OfficeVision mail files and directories to swap over.

IBM "kept us in the dark for much too long, so we weren't too pleased with that," said Gord Stang, project leader of office automation for the city of Edmonton in Alberta, Canada. "But they have since provided a pretty good service to us."

In June, IBM officially killed OfficeVision/LAN 2, which it once expected to be a key piece of its Systems Application Architecture office strategy. It then boosted an existing relationship with Lotus by positioning the company's Notes workgroup platform as the key local-area network software for its office strategy and offering OfficeVision/LAN customers a free trade-in program to Notes.

> In June, IBM officially killed OfficeVision/LAN 2, which it once expected to be a key piece of its SAA office strategy

The companies are now saying they expect up to 500 customer sites worldwide to make the swap by year's end. However, that includes dozens of very small OfficeVision installations, where the LAN software was installed but never really took off.

According to Lotus, of the approximately 200 U.S. customers they have picked up, two-thirds had fewer than 50 users and a few had only one or two licenses. Lotus also said that 80% are new customers.

"The interesting thing is with the limited success of OV/2, the real beneficiary in this is Lotus," said Stuart Woodring, an analyst at Forrester Research, Inc. in Cambridge, Mass.

The Notes converts said they are pleased with their switch and said IBM is making up for its mishandling of the OfficeVision/LAN saga. "They knew a year ago that OfficeVision/LAN was dead, but they didn't tell us until early this year," Stang added.

Blue Cross/Blue Shield of Florida in Jacksonville recently switched 100 users to a combination of Notes and CC:Mail.

"As an administrator, it's easier now," said Rein Hofstra, network administrator at Blue Cross. "And the functionality for users has really improved."

Hofstra said the exchange program delivered Notes at a fraction of what it would have cost if he had licensed it as a new Notes user. He was running OfficeVision for Microsoft Corp. DOS and Windows with a per-seat cost of about $90. Each Notes license lists for about $495.

Stang said IBM threw in extra service and support to help convert his 75 users. While the original contract called for three weeks of service, "our rep said he'd do it until the end of the year, and he's lived up to it," he said.

Apple latest victim of PC shortage

By James Daly

CUPERTINO, CALIF.

Apple Computer, Inc. is once again having trouble meeting demand for some of its hottest PCs.

Distributors said the models in shortest supply are the PowerBook 180 and 145 portables, the newly introduced Performa 600 and the high-end Quadra 950. Apple now faces a backlog that some sources said is growing by as much as $100 million each week and is expected to last through next month.

Particularly troubling is the dearth of the PowerBooks, which an Apple spokesman attributed to a constrained supply of its active-matrix screen. The popular line has generated more than $1 billion in revenue since its introduction in October 1991, but right now "the PowerBooks are virtually impossible to come by," said Edward Anderson, president of the 320-store Computerland Corp. chain.

"We're getting 10% to 20% of what we order. Our salespeople are hysterical," he added.

Apple is not alone in its inability to satisfy its customers' hunger for new machines — both IBM and Compaq Computer Corp. are also having trouble meeting demand [CW, Nov. 23] — but the current shortfall has generated a painful feeling of deja vu for the firm, which experienced similar scarcities when the original three PowerBooks were introduced last year.

Distributors fear the undersupply could slow a rising tide of enthusiasm for the Macintosh. Apple has thus far surpassed IBM in unit sales of PCs in the second and third quarter of this year and could finish 1992 in the top spot if the shortages do not prevent that.

"It's a real mistake to have products that are hot and unavailable," one distributor said. "I just hope we don't get customers moving to other manufacturers' products."

Tim Bajarin, president of Creative Strategies Research International, Inc. in Santa Clara, Calif., added: "Apple has used the ease-of-use argument to lure people from buying Windows, but if they do not have desktop systems to meet demand, the uncommitted could jump back to the Windows camp."

Joe Harris, director of information technology at NBC-TV, said the shortage of PowerBooks and Quadra 950s has been exacerbated by another product drought. "Even more difficult than getting the boxes is getting the upgrades to the memory, especially for the PowerBook line," he said. "This is unforgivable."

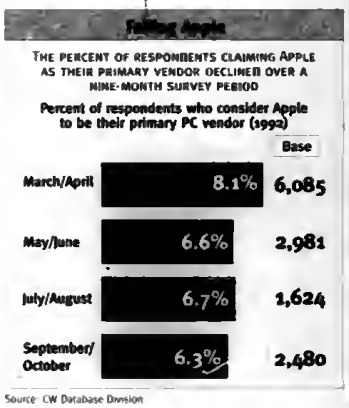
Apple spokeswoman Pat Kinley said the company is doing everything it can to meet demand by going to a "round-the-clock production cycle at the main PowerBook production facility in Fountain, Colo. The shortage is not expected to ease, however, until at least the first quarter early next year, she said.

Some analysts also said part of the problem can be attributed to "double booking" — retailers' ordering twice as many computers as needed to fill orders.

The swelling backlog has also reportedly prompted new punitive measures within Apple. According to some Apple employees, the company has begun cracking down on divisions and managers who continually underestimate what consumers will buy.

How's them Apples?

The shortage of the Performa 600 this Christmas shopping season could be painful for Apple. When it was introduced, Apple Vice President Keith Fox said it would target home users. Some analysts called the Performa 600 "the first easy-to-use multimedia computer." Suddenly, Apple has some very hot machines — but no one can get their hands on them.



Lotus to ship 1-2-3 upgrade

By Rosemary Cafasso

CAMBRIDGE, MASS.

With the shipment of 1-2-3 for DOS Release 3.4 scheduled for today, Lotus Development Corp. said it is once again considering a plan to consolidate its various DOS spreadsheets into a single product line.

"We are exploring doing a release that could be an upgrade path for both" the 2.X and 3.X series of DOS spreadsheets, said Jeffrey Beir, vice president of Lotus' spreadsheet division. "If we find we can't, we will continue on the two-product path."

A possible merger of DOS products is an ongoing issue for Lotus. A single product line would be easier and less costly to manage. Yet Lotus also continues to say that it will not leave either group in the lurch.

Lotus currently markets the 3.X series of DOS spreadsheets to power users who require such advanced features as three-dimensional modeling, while its 2.X releases are for the more typical spreadsheet users.

> Beta-test users differed when it came to a single DOS spreadsheet

With the release of 3.4, the similarities between the 3.X series and 2.X series will be even greater. Release 3.4 will pick up many of the ease-of-use features of 2.4, making the two products a "subset and supersubset," according to Beir. "With this release, we are in a better position to ask if we can deliver a single product," he added.

While beta-test customers gave 3.4 good reviews, they differed sharply when it came to the idea of a single DOS spreadsheet.

"I really need the three-dimensional worksheets, and [3.4] has given me some features that make it easier and quicker," said Dan Saint, an international finance specialist at Chrysler Corp.

Todd Munyon, a senior marketing engineer at Square D Co. in Smyrna, Tenn., said he wants Lotus to sell just one DOS spreadsheet "so it would be much easier to keep track of.

"You hear about 2.4 and 3.1 and you wonder which one is the most recent or which one has the features of the previous one," Munyon added. "Today, there's a bit of a question mark."

On the other hand, William Reichenstein, PC support consultant at American Savings Bank in Irvine, Calif., said he hopes Lotus sticks to its current game plan because his users require both products.

"About 25% of us use the 3 series and 75% are using 2," Reichenstein said. "It suits us to have both."

Reichenstein said the smaller group is made up of "heavy users" in the finance and accounting department. Meanwhile, the bank continues to use some IBM PC XT systems, which can't run the 3 series. In this case, the users have no choice but to use a 2 series spreadsheet.

At the very least, Lotus should come up with a new naming scheme to help users better understand the product differentiation, said Jeffrey Henning, a senior analyst at BIS Strategic Decisions in Norwell, Mass.

"The 3.X products should have a new name, especially now that they are cross-pollinating them," Henning said.

DATABASE PERFORMANCE

SYBASE

BEST: 183 TPS

ORACLE7

BEST: 645 TPS

Database	System	Cost/TPS	Transactions Per Second
ORACLE7	Pyramid MIServer ES	$ 10,765	645.1
ORACLE7	Sequent S2000/750	$ 11,066	618.3
ORACLE7	HP 9000/890	$ 11,606	578.0
ORACLE7	NCR 3550	$ 9,398	312.3
DMS	Unisys A16-61E	$43,198	272.5
DMS	Unisys 2200/622ES	$43,000	255.7
TIP/FCSS	Unisys 2200/462	$28,053	228.5
Rdb	VAX 6400	$ 8,172	208.8
ORACLE7	HP 9000/897	$ 10,737	184.5
SYBASE	Sequent S2000/250	$ 8,686	183.3
TIP/FCSS	Unisys 2200/442	$27,525	177.3
Informix	HP 9000/870	$16,[illegible]	173.2
SYBASE	Sequent S2000/700	$ 14,662	168.9
ORACLE7	IBM RISC 6000/980	$ 11,002	160.3
DMS	Unisys 2200/611ES	$43,[illegible]	159.4
DMS	Unisys A16-41E	$44,[illegible]	158.1
ORACLE7	IBM RISC 6000/580	$ 9,179	157.2
ORACLE7	NCR 3450	$ 8,045	152.4
Informix	NCR 3550	$12,737	150.6
ALLBASE	HP 3000/992	$12,[illegible]	145.0
DMS	Unisys 2200/462	$27,[illegible]	133.1
Informix	Sequent S2000/700	$22,[illegible]	129.1
Informix	Unisys U6000/85	$24,[illegible]	129.0
Rdb	VAX 7610	$ 8,[illegible]	123.8
Informix	IBM RISC 6000/580	$ 8,[illegible]	120.9
Informix	HP 9000/870	$17,[illegible]	111.1
ALLBASE	HP 3000/977	$ 8,[illegible]	111.1
SYBASE	HP 9000/867	$ 8,323	110.5
SYBASE	HP 9000/877	$ 8,472	110.5
Informix	HP 9000/867	$ 9,717	110.4
Informix	HP 9000/877	$ 9,[illegible]	110.4
ORACLE7	Sun 690MP	$12,604	107.2
DMS	Unisys 2200/442	$37,458	104.5
Rdb	VAX 4600	$ 8,295	103.8
Rdb	VAX 4500	$ 8,918	103.1
Rdb	VAX 6610	$ 9,455	102.3
Informix	IBM RISC 6000/970	$10,730	100.9
Informix	NCR 3450	$ 8,422	100.3

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News Shorts

OLE 2.0 enters beta testing

Microsoft Corp. has announced that Object Linking and Embedding (OLE) Version 2.0 has entered beta testing. The new version supports in-place editing and user-interface integration, meaning that when an object is manipulated, it will remain in place on the document and only the menus will change. OLE 2.0 also supports drag and drop of objects between applications and provides a means of allowing applications to register their command set, creating a method for "integration languages" to control multiple, dissimilar applications at a low level. OLE 2.0 is due for release in the middle of next year.

Windows leads software sales surge

The **Software Publishers Association** said PC software sales for the third quarter grew 11.6% over the same quarter last year. The $1.43 billion worth of software, measured at retail sites, included $644 million for DOS applications, $487 million for Windows and $243 million for the Macintosh. DOS once again showed a year-to-year decline, this time of nearly 16%. Windows and Macintosh software saw respective growths of 90.6% and 17.4%.

PowerPC notebooks on tap

Austin, Texas-based **Tadpole Technology, Inc.** last week announced an agreement with IBM to develop notebook systems based on the PowerPC reduced instruction set computing (RISC) architecture. Tadpole, which last year introduced the SPARCbook notebook computer, plans to develop notebooks that IBM will market. The first product will use the PowerPC 601 chip, one of four high-performance RISC microprocessors being co-developed by IBM and **Motorola, Inc.**

Hackers plead guilty

Two computer hackers charged in July with illegally entering and tampering with some of the nation's largest computer networks pleaded guilty last week to federal conspiracy charges [CW, July 13]. John Lee, 21, of Brooklyn, N.Y., and Julio Fernandez, 19, of the Bronx, face up to five years in prison; they will be sentenced at a Feb. 5 hearing in U.S. District Court in Manhattan. They and three other men — part of a group called MOD (Masters of Deception) — were arrested in July on federal charges of tampering with large corporate computer networks, including those at **Martin Marietta Corp.** and **TRW, Inc.** In a written confession, Lee said he was able to monitor data transmissions and obtain passwords on Tymnet, a worldwide network used by banks and the federal government. Authorities said the telephone companies and corporations whose systems were corrupted claim they suffered $330,000 worth of damage. The other three defendants, charged with 11 counts of conspiracy and other computer-related crimes, face trial in April.

SHORT TAKES **Oracle Corp.** said last week that it has formed a new business development group to develop more partnerships and joint ventures to take advantage of new technologies. Its initial focus will be on telecommunications and publishing.... **Data General Corp.** signed up **Dickens Data Systems, Inc.** in Roswell, Ga., to sell DG's Clarion storage line. Dickens plans to offer a Unix-based redundant arrays of inexpensive disks system this month, with prices starting at $28,000 for a 2.5G-byte device.... **IBM** last week named Steven A. Mills as site manager of its Santa Teresa Laboratory in San Jose, Calif. Mills replaces Thomas Furey Jr., who was tapped to head IBM's relaunched client/server unit.

News shorts, *page 16*

Canadian firm uses leverage to enforce enterprisewide standards

Will pay half the cost if units install corporate-standard software

By Jean S. Bozman
TORONTO

Noranda, Inc. has a model for distributed computing in the 1990s — and it works.

The $8.5 billion Canadian natural resources company has not owned a mainframe since 1985. Its 60 operating companies handle their own data processing on midrange computers.

Now, as it moves to a client/server architecture, Noranda is using friendly persuasion to gain support from the firm's 1,000 information systems professionals for a single set of corporate software standards.

Last week, for example, Noranda said it had selected a single relational database engine, The ASK Group, Inc.'s Ingres 6.4, along with Ingres application development tools.

Reason to comply

Noranda is giving business units a big incentive to comply with standards: It will pay half the rest if the units agree to install corporate-standard software.

"There are always economies of scale because we get master license agreements with vendors," said Chief Information Officer Ray Connell.

The drive for standards allows the firm to share expertise in application development and to reduce overall costs because of reusable code and master software licenses, such as the use of Ingres at multiple sites (see story at right).

> Standards are one way the conglomerate hopes to keep IS costs down

One reason Noranda's distributed scheme works, Connell said, is that just a fraction of all data flows from one operation to another — or to headquarters. However, financial results, including consolidated sales figures, are sent to Noranda headquarters and processed on Hewlett-Packard Co. computers that headquarters shares with IS departments at Noranda Minerals, Inc., a Toronto business unit.

Crystal ball

The future came early at Noranda, which started its move to distributed computing in the late 1970s with multiple minicomputers.

"I hate to tell you this," Connell said, "but I have no computers on the floor [of my department]."

The headquarters IS staff numbers only 35, he said, and includes many with business backgrounds.

Noranda's IS group began devising a comprehensive set of software standards in 1990 as the foundation of the company's move toward Unix, open systems and client/server computing.

CIO Ray Connell: *'There are always economies of scale'*

Various criteria

Task forces survey products in various categories and select one based on key criteria, such as usefulness and the availability of technical support around the world. However, some business units may elect to keep their own databases and development tools, including Oracle Corp. databases and older, flat-file databases.

Other standards include Transmission Control Protocol/Internet Protocol for networking, Unix operating systems, the Open Software Foundation's OSF/Motif and Microsoft Corp.'s Windows graphical user interfaces.

Standards are one way the conglomerate hopes to keep IS costs down and share technical skills on standard products across business units.

Common applications built on these standards can also be shared among companies, such as process manufacturing software for mining, pulp plants and natural gas companies.

As Noranda moves to open systems, it plans to install IBM RISC System/6000s and Unix computers from HP, Digital Equipment Corp. and Sun Microsystems, Inc. The Sun systems will be used mostly by Noranda's oil and gas exploration business units.

"We're looking for common systems to share business problems," Connell said. "If four or more Noranda companies are willing to go in on a venture, we create a functional interest group to study systems."

Quick work by NEWS

Noranda [illegible] prime [illegible] porate IS.

A kind of [illegible] telecom [illegible] phone calls [illegible] people representing about one-third of the [illegible]

"There are good concepts [illegible] the companies," said NEWS Chairman Murray Dunnigan, manager of information services at James MacKeen, Inc., a Noranda pulp and paper manufacturing unit in Masson, Quebec. "We got the best people together and identify the best operating practices in these companies. We've taken the technological best-of-breed so that we get the best application money can buy, but we also know how to use the thing."

So far, NEWS has identified eight core applications that can be reused by many business units; no single unit has adopted more than two of them, Dunnigan said.

"We don't maintain that we can model the whole Noranda enterprise, but we do have a model that can be applied to each operating unit," he said. The enterprise data model might be considered complete in five years, he said, adding, "that's when we get the ultimate payoff."

Noranda's IS budget runs about 2% to 3% of sales, Dunnigan said — a low percentage compared with companies that depend on mainframes. But IS budgets may fall even lower by 1997.

"I don't think we can identify financial gains from standards right now," Dunnigan said, "but four to five years from now, we will be able to do that. Until then, we are sharing the talents and skills that are not available in every Noranda company." —*Jean S. Bozman*

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```
/* reset the counter for build of third table */
CREATE PROCEDURE la_qty
/* for use on WESTCOAST server */

/* returns count for one part only */
@partno char(6),
@la_count int output
AS
SELECT @la_count =
(SELECT qty FROM la_parts
WHERE partno = @partno)

DECLARE @cnt int
DECLARE @counter int
DECLARE @la_count int
DECLARE @partno char(6)
SELECT @cnt = COUNT(partno) FROM ny_parts

/* ny_parts is the parts master; need count
for sequential comparison with la_parts
to simulate a distributed join */

SELECT @counter = 0

/* create temporary table for part numbers
and quantities from ny_parts */
CREATE TABLE #allparts1
   (partno char(6) NULL,
   ny_qty int null)

/* create temporary table for row numbers
for sequential call of la stored procedure */
CREATE TABLE #allparts2
   (seq int)

/* create temporary table for
sequential build from first two temp tables */
CREATE TABLE #allparts3
   (partno char(6) NULL,
   ny_qty int null,
   la_qty int null,
   seq int)

/* build sequence numbers for each ny row */
while @counter 1> @cnt
begin
   select @counter = @counter + 1
    insert into # all parts 2 (seq) values ( @ counter )
end

/* populate temp table with ny parts and quantities */
insert into #allparts1 (partno, ny_qty)
select ny_parts.partno; ny_parts.qty from ny_parts
```

*Program code independently written and tested.

ORACLE7

3 LINES OF INDUSTRY STANDARD SQL

```
SELECT NY_QTY, LA_QTY
FROM NY_PARTS, LA_PARTS
WHERE NY_PARTNO = LA_PARTNO;
```

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Levi's moves order system from host to HP minis

By Mark Halper
SAN FRANCISCO

■ Levi Strauss & Co. last week gave new meaning to the term "shrink to fit" as it completed a massive conversion program that will enable it to run a critical piece of IBM mainframe software on smaller Hewlett-Packard Co. minicomputers.

The jeans and apparel maker said it will continue to run its Model Stock Management (MSM) software on an IBM 3090 for U.S. operations but will start loading the program on HP 3000 minicomputers in its international division, where the company is HP-based and has been operating without the MSM software.

Levi Strauss tapped Norwood, Mass.-based systems integrator Innovative Information Systems, Inc. for the eight-month project in which Innovative converted 500,000 lines of Cobol code using IBM's DB2 into a program using HP's Allbase/SQL database running on HP's MPE/IX operating system.

The MSM software enables Levi Strauss sales representatives to submit retailers' orders electronically using laptop computers tied into the host, explained Paul Benchener, director of Levi Strauss Global Quick Response operations.

MSM helps Levi Strauss determine its customers' product needs by keeping detailed records about which products are moving, noting information such as color, size and style. The MSM software is part of Levi Strauss' LeviLink services, which support a delivery system intended to supply goods exactly when needed.

Benchener said he expects international retailers to use the system extensively because many do not have their own sophisticated inventory management programs. In contrast, he said about 75% of all electronic orders placed by Levi's U.S. customers are through each customer's own system, and the balance is placed through MSM.

Benchener estimated that close to half of Levi Strauss' approximately $3.3 billion in U.S. sales in the year ended Nov. 30 were placed electronically via one of the two methods. Levi Strauss expects to report corporate revenue of about $5.5 billion for the year.

Steven Levandowski, vice president of information resources at Levi Strauss International, said the company began running a pilot installation in Helsingborg, Sweden, earlier this year. It plans to add MSM to an HP 3000 in Toronto next month to service the 250-store Pantorama chain. It also plans to bring MSM on-line on HP machines in the Philippines, Mexico, Australia and Hong Kong next year. Levandowski said there is currently no time line for Europe.

He said Levi Strauss is in the process of developing a point-of-sale (POS) information system for the HP 3000. The HP system will include more functionality than the IBM-based POS information system Levi Strauss uses in the U.S., he said.

Allbase for all

Levi Strauss' sites in Europe, Asia and Canada will each have their own copy of the Allbase/SQL relational database running under HP's MPE/IX operating system.

The relational database will serve as a central repository for store inventory information at 25 sites worldwide. But the multiple Allbase databases will be able to exchange information over a network and make "shadow copies" of vital data on other HP machines.

The company's MSM system had been used only for inventories in U.S. stores prior to the eight-month conversion from IBM's DB2 to HP's Allbase, according to Steven Levandowski, vice president of information resources at Levi Strauss International.

"It was a function innovated in the U.S.," he said. "The [international] business units literally didn't have the application." Without the conversion, Levi Strauss would have had to install an IBM mainframe in Europe.

Client/server updates from the European HP relational database management systems to IBM's DB2 running on the mainframe at Levis Strauss' San Francisco headquarters are technically possible.

Both types of databases support the industry-standard SQL database query language, and HP's Allbase supports read/write access to DB2 databases. But frequent updates from Europe to the U.S. are not part of Levis Strauss' current plan, Levandowski said. "This application will run at the business unit level."

—Jean S. Bozman

Advocates push for better answers

CONTINUED FROM PAGE 1

come its patchy reputation in the commercial arena, other users said.

"Unix doesn't guarantee open systems, but it's almost impossible to go open without it," said Peter Bauer, information systems director at the Michigan-based Marshfield Clinic, which recently completed a $5.5 million conversion from a Unisys Corp. proprietary system to a Unix-based Amdahl Corp. mainframe.

"The arguments that Unix is not standard are tremendously exaggerated, but I think Unix would be better served if the proprietary vendors would stop trying to create their own Unixes," Bauer added.

Another bit of advice offered to the executives was to seek strategic partnerships with vendors — and insist they share some of the added personnel costs associated with moving from proprietary to open systems.

Executives were advised to seek strategic partnerships with vendors

At the UK's Department of Social Security, for example, IBM and two European computer vendors agreed to deliver products that not only comply with X/Open standards but are tested to work in the department's computing environment, according to George McCorkell, technical infrastructure director.

In separate workgroups at the conference, users hammered out their requirements for standards in areas such as data management, desktop strategy and distributed applications support. The end product of their work will appear in March 1993 in X/Open's Open Systems Directive — a kind of blueprint for X/Open's future.

[illegible]

A sampling of 65 vendors' commitments to open systems products

- **Green Light: Standards stable and majority of suppliers committed to products.**
  - Transaction processing monitors. High growth in 1993-94.
  - Transparent file access and management services.
  - Distributed transaction processing.
- **Yellow Light: Standards emerging and most suppliers promising products.**
  - The Open Software Foundation's Distributed Computing Environment (DCE), including directory and naming services.
  - Transaction processing over DCE. Growth expected in 1993-94.
  - Application management functions. Development in 1994-95.
  - Systems and network management. Significant growth 1993 onward.
- **Red Light: No clear standards, market direction unstable and majority of vendors uncommitted.**
  - Distributed security and time services, object management services.
  - Access to non-SQL databases. Low growth in 1993-94.
  - Distributed backup and restore capability. Low growth in 1993-94.
  - Management of multiple data types. Little growth expected.
  - Global data dictionaries. Direction unclear until 1995.

Source: Datapuest Europe S.A., X/Open Co.

Corrections

An article on wrapping object-oriented code around Cobol code [CW, Nov. 30] inadvertently mentioned Borland International, Inc. as a vendor of the SmallTalk object-oriented programming (OOP) language. Borland sells a version of the C++ OOP language, not SmallTalk.

A box that accompanied a story on IBM's client/server strategy [CW, Nov. 30] should have stated that at least 500 people from the company's Endicott, N.Y., Enterprise Systems line of business — or at least 900 people overall from across the company — were involved in the effort.

Because of a software glitch at our production plant, the information graphics on pages 14, 16 and 109 were incorrect. See the corrected versions at right.

DHL's system

Servers: IBM RS/6000s; legacy systems from 11 manufacturers including NCR Corp., Stratus Computer, Inc., Pyramid Technology Corp., Prime Computer, Inc., HP, DEC.

Repository: IBM ES/9000

Clients: Apple Computer, Inc. System 7.0, OS/2, Windows

Networking: IBM Token Ring; Novell, Inc. NetWare; and TCP/IP, Open Systems Interconnect and IBM LU6.2 protocols.

Integration software: Peerlogic, Inc.'s Pipes

Capital costs: $5 million in 1991; $10 million in 1992; $15 million predicted for 1993, with costs decreasing thereafter.

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At a glance

1956: Consent Decree issued.
April 1991: ACS asks Adapso to formally complain to the Justice Department.
May 1991: IBM forms wholly owned subsidiary ISSC to handle its outsourcing contracts.
Aug. 4, 1992: ACS sends letter to IBM requesting information on ISSC. IBM responds in September.
November 1992: Justice Department elevates probe.

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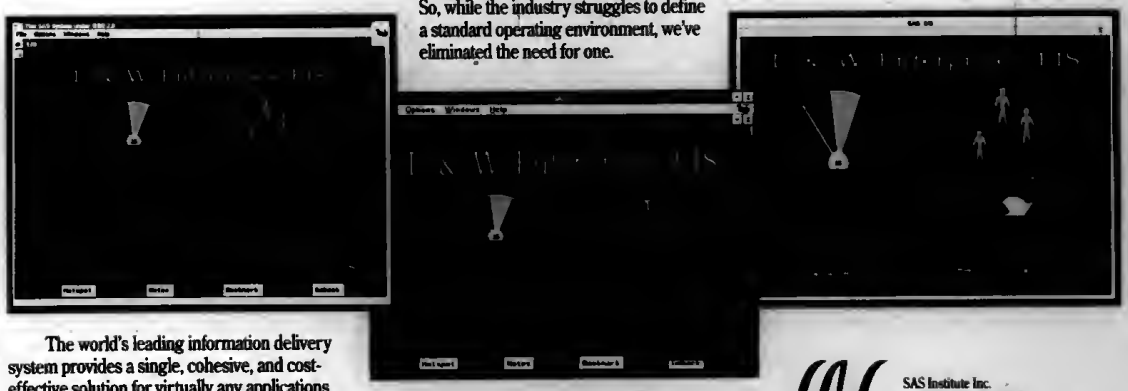

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Production woes hit Amdahl

By Jean S. Bozman
SUNNYVALE, CALIF.

Amdahl Corp. last week publicly acknowledged that a manufacturing flaw in some channel interface boards had led to outages for some users of 5995M mainframes.

The $1.7 billion mainframe maker, however, denied statements by several industry analysts that technical problems had slowed installations of its new 5995M IBM-compatible mainframes, saying, "speculation that the 5995Ms have severe technology problems is incorrect."

Amdahl said about 10 user sites were affected by problems with the new machines' Quadruple Dual Interface Handlers (QDIH) boards, which connect the mainframe CPU with its channels. That is roughly 20% of all 5995M machines shipped since late last year, analysts said.

Some 5995M users discovered the problem through outages; others were warned by the company, Amdahl spokesman Dick Whitcomb said. The boards had been treated with a new chemical process designed to avoid the use of chlorofluorocarbons (CFC), which damage the ozone layer, he said.

The water-cleaning process was also used on other types of 5995M boards, according to Mark Hess, vice president of Gartner Group, Inc.'s large computer strategies service. "In late August and September, they began to see some problems in other parts of the machines, [in] some memory boards and a board in the service [maintenance] processors," Hess said.

Those problems had not cropped up when the QDIH board problem was identified, he said.

Whitcomb said boards besides the QDIH boards might have been affected by the flawed cleansing process, but he would not identify them. He said diagnostic software in Amdahl mainframes would pick up any intermittent failures caused by faulty boards before a full outage occurred.

> Diagnostic software in Amdahl mainframes would pick up any failures caused by faulty boards

Some sites, however, have not yet replaced the QDIH boards, Whitcomb said. "We have worked out this issue with our customers," he said. "We are a long way down the path of finishing this off."

A few 5995M sites received brand-new mainframes rather than a field-support repair for the faulty channel interface boards. "Amdahl is replacing entire systems in some instances," Whitcomb said, adding that those sites had been planning upgrades to larger machines.

Few users wanted to comment on the problem, which cropped up in September; some only learned of it in October and November.

"We were definitely notified," said Garland Crabtree, area manager for computer support at Southwestern Bell headquarters in Houston. To prevent future problems with its four-processor 5995M, the company switched out the affected boards during scheduled weekend downtime.

Hess said the board problems, while troublesome, did not indicate any fundamental failure in the 5995M product line. "I think there's a little bit of the 'Chicken Little, the sky is falling' reaction, but they're dealing with a manufacturing problem," he said.

Amdahl said all boards are now being cleaned by the older CFC process, which has been modified to comply with U.S. environmental regulations. The process was used only in Amdahl's Sunnyvale plant, which makes 5995Ms for North America. Its Dublin plant did not use the water process.

Demand for the 5995Ms is much lower than expected, dampening Amdahl's plans to recoup hundreds of millions of dollars invested in 5995M development with sales of CPUs list-priced at $20 million to $30 million.

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Advantis nets contract

Joint venture will build, manage network for Ford New Holland

By Elisabeth Horwitt
SCHAUMBURG, ILL.

■ Advantis, the joint IBM/Sears, Roebuck and Co. network outsourcing venture, marked its official launch last week by announcing a contract to build and manage Ford New Holland, Inc.'s corporate network backbone.

The contract with IBM's Network Systems Services (NSS) — now part of Advantis — is expected to save Ford New Holland $1.7 million this year and $2.5 million next year over what it would have paid former parent Ford Motor Co. for network services, according to David Hibshman, Ford New Holland's network manager.

Savings stem primarily from redesigning the network into a more efficient, fault-tolerant topology; from being able to mix voice and data on the same lines; and from being able to bargain with carriers through IBM, he added.

However, the deal is hardly a coup for Advantis, given that the farm and industrial equipment manufacturer originally awarded the contract to IBM's NSS business unit last spring.

IBM won the three-year contract, valued at approximately $10 million, primarily because it was able and willing to go the extra mile, offering technical services even before Ford New Holland had awarded the bid, Hibshman said.

Indeed, Ford New Holland, as a major IBM shop and user of Network Equipment Technologies, Inc.'s (NET) Integrated Digital Network Exchange (IDNX) switches, is almost too good a fit with IBM's and Sears' embedded expertise, according to Howard Anderson, managing director of The Yankee Group, a Boston-based research firm.

"The real goal of Advantis is to sign multiprotocol, not just SNA clients," he added. Advantis is working on several such contracts right now, a company spokesman said.

Announced this summer, Advantis combines IBM's and Sears' internal network operations and network services to create a network outsourcing firm that will offer everything from design and implementation to support and management of customers' data and voice networks, an Advantis spokesman said.

> IBM won the three-year contract because it was willing and able to go the extra mile.

The organization falls under the aegis of IBM's Integrated Systems Solutions Corp. unit and is said to comprise some 3,000 networking professionals.

Leader of the pack

IBM's NSS organization won a competitive bid last spring against the three long-distance carriers to provision and manage a T1 network for Ford New Holland's North America, Mexican and Canadian operations. The $3 billion-plus global manufacturer began planning to exit from Ford Motor's Tariff 12 network in June 1991, when Ford sold 80% of the firm to Fiat SpA, Hibshman said.

The combined networking installations and users of IBM and Sears give Advantis the power to extract major price and service concessions from carriers as the "No. 1 largest user" in the U.S., Hibshman said. By itself, IBM was No. 2 domestically, behind the U.S. government.

IBM's clout has already manifested itself in faster line provisioning. As Ford's carrier, AT&T took up to 45 days to get a new line in place; with IBM, it takes as little as 15 days, Hibshman said.

With almost 6,500 employees in the U.S., Ford New Holland initially considered a Tariff 12, or software-defined, network solution from one of the three leading U.S. carriers.

However, IBM's NSS got its foot in the door when it was brought in to help re-engineer Ford New Holland's Systems Network Architecture network in fall 1991, Hibshman said.

As a reseller of NET IDNX switches, IBM also had the facilities and technical team in place to roll out Ford New Holland's IDNX-based network within four months, while the carriers were talking 12 months, he added.

The U.S. part of the network is scheduled for completion by year's end; links between the U.S. and overseas sites are scheduled for deployment early next year. Ford New Holland will continue to manage its local-area networks in-house.

So far, the outsourcing arrangement has worked well: "I lost a T1 circuit to Chicago the other day and the network never flinched," Hibshman said.

Going global

One piece of Advantis' competitive strategy that is just beginning to fall into place is how the network outsourcing company can compete against global network outsourcers such as Infonet and BT's Syncordia Corp.

Source: Gz Research, Inc.

When the joint IBM/Sears venture was announced last fall, company spokesmen were vague about whether Advantis would offer overseas networking outsourcing services that went beyond bringing in IBM Information Network's overseas units to provide value-added network connections.

In the past few months, however, Advantis' "geographical partners" in Europe and Asia-Pacific regions have grown "more interested in having the same view of network outsourcing as we have and are establishing businesses that [are] offering the same as Advantis in their geographic regions," an Advantis spokesman said.

Still unclear is how various IBM organizations, such as Integrated Systems Solutions Corp. and IBM Information Network, will be involved in these overseas offerings and how overseas and U.S.-based organizations will coordinate their services to provide multinational customers with an integrated, global network outsourcing solution, the spokesman indicated.

"We certainly intend to use a common architecture" for offering such services, including common network platforms, network management software and a common business approach, the Advantis spokesman said. Advantis has already taken part in team bids with overseas IBM businesses on "close to a dozen international solutions," he added.

—Elisabeth Horwitt

Responds to pressure from fast Ethernet

Network Peripherals cuts FDDI prices

By Lynda Radosevich
MILPITAS, CALIF.

Spurred by competition from inside and outside the Fiber Distributed Data Interface (FDDI) camp, Network Peripherals, Inc. said it will begin shipping today a low-cost concentrator and will reduce prices by up to 50% on its FDDI adapter cards.

The Network Peripherals four-port Departmental Concentrator lists for $3,995, and its FDDI adapter cards list for $1,995, down from between $3,000 and $4,000.

The price cuts follow Interphase Corp.'s announcement this fall of $1,595 and $1,995 FDDI adapter cards, which it said will ship in early 1993. The Network Peripherals maneuver drops the average cost per port of an FDDI fiber-port concentrator from around $1,500 to $1,000.

"FDDI vendors are feeling pressure from emerging 100M bit/sec. Ethernet technology and the fact that the FDDI market hasn't really taken off," said Chip Pettirossi, an analyst at International Data Corp. In addition to the competition, dropping chip prices are allowing vendors to produce lower priced FDDI cards, he said. But prices will have to drop even further to rival the roughly $200 per card cost of Ethernet and the expected $400 to $600 per card cost of fast Ethernet.

Network Peripherals, which said it owns roughly 15% of the total FDDI adapter card market, expects managers to use its FDDI technology to connect technical workstations and to bundle PC-based servers on an FDDI server network.

Despite the price cuts, some users said they were wary of FDDI because it is still too pricey and has an uncertain future. FDDI technology is being challenged by other high-speed local-area network technologies such as switched Ethernet and fast Ethernet and, in the future, Asynchronous Transfer Mode.

"The cost of adapter cards is one of the major considerations. The other is that the wiring infrastructure is not there," said Jim Watson, manager of the advanced data processing laboratory at Sparta, Inc. in Huntsville, Ala.

Cable ready

Data-grade untwisted pair (DGUTP) wiring already accounts for more than one third of LAN cable shipments and will continue at the expense of other media such as fiber

Projected U.S. cable connections (in thousands)

	Fiber	DGUTP
1992	120	2,017
1993	126	2,737
1994	126	3,681
1995	132	4,815
1996	146	6,038

Source: Forrester Research, Inc.

IDC estimates that the total number of FDDI PC and workstation adapter cards shipped in 1992 will be only 3,300 and 12,200, respectively. Ethernet card shipments will reach 5.7 million in 1992, the company said.

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Vendors use warranty lure

By Michael Fitzgerald

In a market where features have become commodities and price differentials have flattened, some vendors have turned to longer warranties and sweetened support to woo corporate customers.

The IBM PC Co. started this trend in mid-September by giving three-year warranties and offering seven-day-a-week, 24-hour telephone support, but only for its high-end Personal System/2s. A month later, Hyundai Business Group's Information Systems Division opened its toll-free telephone support to any user. Compaq Computer Corp. initially matched IBM's warranty and support for its servers, and last week it one-upped IBM by announcing a three-year warranty and round-the-clock support for its entire product line.

> Compaq competitors remain unconvinced that there is a need for such warranties.

At least some users were unimpressed.

"The warranty is not a checkoff item in buying — we want to know how they're really going to perform at 3:00 on Friday afternoon when we have a problem," said Jerald S. Noble, director of telecommunications and PC support at the American Cancer Society in Austin, Texas.

The Cancer Society has operations in all 50 states, and Noble said the ability to provide on-site service has much more import than a parts warranty.

Compaq competitors also remain unconvinced that there is a need for such warranties.

"Nothing's free. All those things get bundled in the price of a machine," said Michael Dell, Dell Computer Corp.'s chairman. Dell said his company has so far found that very few of its customers want 24-hour service.

"We don't hear customers asking for just one thing, so we'll offer different programs to different customers, at a cost," Dell added.

"It's not going to raise the cost of our products; we've become more cost-efficient in repairs, enabling us to lower our costs," said Gus Kolias, vice president of customer service and training at Compaq North America.

Kolias acknowledged that on-site service is good for only one year, after which customers have to take the products to authorized service centers. Full, three-year, on-site service costs $77 per unit.

Other vendors agreed with Dell.

"We're not ready to make that decision, and we won't do it just to copycat Compaq," said Rick Krause, general manager of the systems and technology division at CompuAdd Computer Corp. in Austin, Texas. "If a three-year warranty is something customers demand and are willing to pay for, then we'll do it."

Analysts also downplayed what one called "the service wars."

"It's a marketing shift, the battle to see who can come up with the best technical support," said James Poyner, analyst at Rauscher Pierce Refsnes, Inc. in Dallas. "In reality, if a part doesn't go in the first 30 days, chances are very slim it will go in the next three years."

Breaking into the first tier, Dell under closer scrutiny

CONTINUED FROM PAGE 1

tems analyst/programmer at General Waterworks Management Service Co. in King of Prussia, Pa., which has standardized on Dell equipment.

"It's a matter of semantics, isn't it?" asked Michael Stonecipher, office systems manager at United Missouri Bank in Kansas City. "Dell made second-tier vendors legitimate, and the lines between second and first tier have begun to gray anyway."

While some Dell users stop short of calling Dell a first-tier company, they nevertheless have standardized on its PCs. Most said they were drawn to Dell because it offered a lower priced, quality alternative to IBM and Compaq, and it offered effective service. Most added they see no reason to switch back now.

"A number of my clients are going through RFPs [requests for proposals], and most of them absolutely consider Dell," said Matthew Cain, senior analyst at Westport, Conn.-based Meta Group, Inc., which advises large corporate users.

Tough to catch up

Despite perceptions and name recognition, though, Dell has a lot of growing to do to seriously challenge the likes of IBM. Computer intelligence's database of 128,000 corporate sites shows that Dell has 2% of the installed base, with 3.9% saying they will buy in 1993. But IBM, while down 5%, is in 30.8% of companies' 1993 purchase plans.

But nothing — even rampant industry price cutting — has slowed Dell down. In fact, third-quarter revenue growth hit 149%, the third straight quarter it grew more than 100% from the year-earlier period.

Dell's third-quarter success seemed to dodge another bullet because it was achieved with a product line that was slated to be overhauled last summer. Dell waited until last week to release new models.

Dell executives said the decision to delay the product refresh was a matter of course. Company founder and Chairman Michael Dell told *Computerworld* he remembers it differently. "I was surprised when I heard the recommendation to wait," Dell said. But top staff convinced him that while the company needed new products, it would fall short of customer needs if it did not wait for certain components, such as S3 Corp.'s video accelerator chip.

The decision to wait underscores claims that Dell remains flexible even as it heads toward $2 billion in revenue.

Still, along with success comes scrutiny.

"People are asking when Dell's going to hit the wall, just like they did with Compaq," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass.

In the spotlight for its rapid growth and presence in the corporate buying realm, Dell has sometimes blinked from the glare.

For instance, the company attacked a Kidder, Peabody & Co. analyst who questioned the way it accounted for its currency trading [CW, Nov. 30], going so far as to publicize the analyst's relationship with an investment fund analyst in an attempt to discredit him.

Wim van Oversteeg

Michael Dell *has made Dell a company that ranks alongside IBM, Apple and Compaq*

Analysts have also challenged Dell's business model. Dell's integrated model gives it control over everything from design to distribution, though Dell builds no notebooks save the 320SLI. Nor does it manufacture its Dimension family of products.

Michael Dell said this approach nets the company invaluable customer feedback, which its competition lacks.

"The integrated model is what will win in this marketplace, and we're the only ones who have it," said Thomas Martin, Dell's vice president of marketing.

John Varol, director of production/manufacturing engineering at Dell, said the firm will manufacture its next-generation high-end notebooks. This mollified some analysts, who said they feared Dell wants to reduce its manufacturing presence.

"It has a viable business model, but it's also sensitive — if Dell's gross margin continues falling [from 30% to 21% in 1992 alone], the model has problems without [continued rapid increases] in volume, and I think we're looking at peak growth right now," said James Poyner, analyst at Rauscher, Pierce and Refsnes, Inc. in Dallas. Poyner said Dell could lose money at some point in the next year before the price wars end.

Joel Kocher, newly promoted to Dell president, North America, defended Dell's gross margins, saying recently that Dell can operate effectively on 15% margins. The company's third-quarter operating expenses were 14.8% of sales, down from 23.8% the previous year.

Dispute heating up

Still, some customers said they worry that if shrinking margins do not hurt the company, a worsening tiff between Dell and reseller CompUSA will. As of September, Dell shifted CompUSA (and Staples Office Superstores) away from selling its entire product line to selling only its low-end Dimension line.

While Dell officials said this is a positive move for both companies and will affect only "a couple of handfuls" of customers, two contacted by *Computerworld* said they would leave Dell if they have to buy direct from it, and several others said they would like to buy Dell products from local resellers to gain a local point of service.

"When I need to reach out and slap somebody, it helps when they're local," Stonecipher said.

"We have for the most part stayed with Dell, but if we're buying a machine where there's no difference in price between Compaq and Dell, we may buy Compaq because we can buy it through a reseller and deal with them if there are problems, instead of going mail-order," added William Tignanelli, assistant vice president of information systems at the Federal Reserve Bank of Baltimore, which switched from Compaq to Dell early this year.

These questions are something of a surprise, given Dell's consistently high marks in service surveys from the likes of Dataquest, Inc. and J. D. Powers and Associates.

Still, even the worst naysayers stop short of predicting doom for Dell. Users and analysts agreed the company has marketed itself as one that provides quality machines at low prices. Several cited the new product lines, which make it the first major vendor to include local-bus video, as examples of Dell's attention to customer wants.

Overall, International Data Corp. (IDC) estimated Dell will sell 450,000 units in the U.S. this year, tripling last year's sales. IDC said Dell will ship 725,000 units worldwide this year, which is significant, though well shy of the 2.6 million units Apple is expected to ship.

Product makeover

Dell's new product lines, the L, M, ME and T families, overhaul its offerings and, in the case of the T, give it a midrange server to battle Compaq's ProSignia line.

The 486/L series: Five low-profile, AT-bus PCs with a base price of $1,200.

The 486/M series: Midrange AT-bus systems with a base price of $1,450.

The 486/ME: Extended Industry Standard Architecture PCs starting at $1,750.

The 486/T: Three AT-bus tower servers with a 33-MHz 486DX system starting at $1,950.

Base prices include a 25-MHz 486SX (except the T line), 4M bytes of random-access memory, an 80M-byte hard drive and one floppy. All systems use local-bus graphics and have embedded diagnostics.

AMD loses bid to copy Intel I486

By Michael Fitzgerald
SANTA CLARA, CALIF

Intel Corp. scored a major victory in its battle against Advanced Micro Devices, Inc. (AMD), last week when a judge said AMD does not have the right to copy Intel's microcode. Analysts said the decision could stem the fall of 486 PC prices, for now.

AMD retains the rights to produce and sell its clones of the 386, pending a review of an arbitrator's ruling earlier this year, but it cannot sell its 486 clones. AMD had planned to release the clones as early as this month if the judge decided in its favor. AMD issued a statement saying it expects to have a clean-room version of the 486 on the market by the middle of 1993.

"This could stem lower prices on 486 systems," said Richard Zwetchkenbaum, analyst at International Data Corp. in Framingham, Mass. "It helps to solidify Intel as the dominant 486 supplier. There is still IBM and Cyrix/TI to contend with, but [the decision] somewhat postpones the need for Intel to drop 486 pricing next year."

IBM makes an Intel-sanctioned variant on the 386 and 486, and Cyrix Corp. designed its own versions of the chips, prompting an Intel suit. Texas Instruments, Inc. licensed the Cyrix design, and both companies have said they plan to aggressively introduce new products in 1993.

An Intel spokeswoman said Intel will continue to make quarterly price cuts on its various 486 models. She emphasized that Intel does not plan to attack AMD customers or end users.

Intel has asked a judge for $35 million in damages for AMD's copy of the 287 math coprocessor and for $600 million in damages for the 386, should it win its appeal of the arbitrator's ruling, which is not likely to be decided for some time.

CA sued by bank over upgrade fees

By Thomas Hoffman
LOS ANGELES

First Interstate Bancorp is suing Computer Associates International, Inc. for imposing upgrade, maintenance and new license fees that the bank claimed are not allowed under its license agreements.

CA filed a counterclaim last week, stating the bank "knowingly misused" certain software products and allowed its unlicensed affiliates "access to the licensed software products." First Interstate recently consolidated its data processing operations into two data centers, which are operated by First Interstate Bank of Oregon in Portland and by First Interstate Bank of Arizona in Tempe.

First Interstate claimed that its "perpetual" license agreements with CA prohibit the vendor from charging upgrade and maintenance fees against fixed-price licenses, according to court papers filed on Aug. 25 in U.S. District Court in Los Angeles. The bank claimed the terms and conditions of the licenses cannot be altered, regardless of CPU upgrades or site relocations.

CA said it "actively opposes software piracy and violations of software licensing." The vendor said it plans to "vigorously pursue this case."

Other charges include breach of contract and unlawful withholding of maintenance.

The bank holding company, which has $51 billion in assets, has more than 60 software licenses with CA, including ACF/2, CA-1, CA-7 and CA-11 mainframe software programs. All are involved in the suit. CA's recent licensing alterations are not relevant in this case, a source close to the bank said.

First Interstate and its legal counsel, Steven A. Marenberg at Irell & Manella, a Los Angeles law firm, refused to comment on the suit.

The case is currently in the discovery stage. No trial date has been set.

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News Shorts

Halon phaseout accelerates

Representatives of industrialized countries meeting in Copenhagen agreed to phase out the production of ozone-destroying halon gases by the end of next year, a year earlier than the current plan and six years earlier than stipulated in the 1987 Montreal Protocol treaty. The latest agreement to stop producing the popular fire-retardant chemical used in many computer rooms must now be ratified by each country.

GM ups EDS contract

Electronic Data Systems Corp. last week announced a five-year deal with **General Motors Corp.**'s North American Operations that calls for EDS to continue supplying data processing services. Terms were not disclosed. The agreement essentially consolidates accords EDS had in place with divisions that GM disbanded earlier this year. EDS said it agrees with GM that cuts in processing, which will be made redundant by the consolidation, should be sought. The accord also creates the possibility that EDS will start to provide non-data processing services to the ailing automaker.

Federal Reserve to rewire

The **Federal Reserve** last week started to link its 12 banks into an autonomous data network with connections to depository institutions and banks. The new network will help carry increased traffic from the banks to three new data processing centers and will use switching and rerouting to protect the data, a spokesman said.

Browning-Ferris outsources

SHL Systemhouse, Inc. said it signed a five-year contract with Houston-based **Browning-Ferris Industries, Inc.** under which SHL Systemhouse will take over application development and support. Terms were not disclosed. SHL Systemhouse said it is offering jobs to the 90 people in Browning-Ferris' IS department who have been handling the work SHL Systemhouse is taking over.

NSFNet goes to T3 speeds

The last circuits on the 4-year-old T1 National Science Foundation Network, which provided the Internet backbone, were switched off last week in favor of a new T3 backbone. Operating at 45M bit/sec., the new backbone can send a 20-volume encyclopedia across the network in less than 23 seconds, according to **Merit Network, Inc.**, a member of the consortium that worked on the project. More than a million host computers are connected to the Internet.

SHORT TAKES **IBM** shipped its 200,000th Application System/400 last week to **Heineken N.V.** in Amsterdam, which has 23 AS/400s.... **Sequoia Systems, Inc.** announced that it plans to engage an investment banker to resolve the company's liquidity problems. It is currently in default under its bank credit agreements and must obtain additional funding to continue operations .... Wendell Ying, an analyst at IBM's Toronto laboratory, took over chairmanship of **CASE Communique**, a 100-member alliance of users and vendors that is seeking application development standards.... **BT** added **Cisco Systems, Inc.** routers and **Fibronics International, Inc.**'s fiber-optic multiplexers last week to the growing list of devices that it will sell and support as part of its internetworking service.... **Cray Research, Inc.** installed a Y-MP C90 supercomputer at the **European Centre for Medium-Range Weather Forecasts** in Reading, England.... **The University of California** at Davis Medical School has found that women who make computer chips have 40% more miscarriages than those female employees who work elsewhere in the same factory.

DEC faces wary users with revised game plan

CONTINUED FROM PAGE 1

sponsibility for DEC sales on third-party channels, compared with the current emphasis on a direct DEC sales force.

For example, DEC has already begun discussions with mass merchandisers and large retailers such as Costco Wholesale Corp., according to a DEC channels marketing spokesman. These and several other channels will supplement the existing channels of systems integrators, technical OEMs, software developers, distributors, master resellers and value-added resellers to sell everything DEC offers, with the exception of mainframe systems. DEC's direct sales force will focus on more complicated, high-end projects, he said.

Industry analysts said making a transition like this one involves major shifts in distribution support and commission structures, which will be a significant challenge for DEC.

"It's going to be a major switch for DEC, and I don't know if the company can turn around like that," said Rich Finkelstein, president of Performance Computing, a market research firm in Chicago. He said that while DEC needs to do this to cut costs and compete effectively, customers are used to dealing directly with DEC and with specific people. "It's going to shake everybody up."

The DEC spokesman emphasized that most of these changes will occur gradually during the course of this fiscal year.

User Robert Ayr, a systems manager at PacifiCare Health Systems, a health maintenance organization in Cypress, Calif., said working with his own DEC salesman saved time. While some third parties with which he has worked have been stellar, others "really didn't know what they were doing and were just trying to drum up business."

Perhaps of more immediate concern to users are the products slated to be discontinued by DEC as part of its reorganization. These are expected to include products such as DECset computer-aided software engineering tools, graphics package DECpresent and word processor DECwrite, sources said.

A DEC spokesman said details have not yet been finalized, but DEC will communicate any available "good solid information" at DECUS.

Although the spokesman claimed that those affected will be "products which are not of maximum benefit to the greatest number of customers," some users were concerned.

"While it makes sense for DEC to cut back, a lot of customers at DECUS won't see it that way and will only see the effect it has on them," said Bill Mayhew, chairman of the DECUS business practices special interest group.

The products that are cut back will either be put into maintenance mode by DEC or discontinued altogether and farmed out to third parties or to entrepreneurial spin-off groups from within DEC that would then become independent subsidiaries or "enterprise zones."

"My own reaction is that it's about time that they get rid of the dead wood. On the other hand, I hope [my products are not] dead," said Jeffrey Jalbert, a member of DECUS' board of directors.

Layoffs of approximately 1,000 software group engineers and an additional 800 software engineers in the networking and hardware groups are expected to be finalized this week.

Layoffs of at least 8,000 DEC employees are expected to be announced by the end of this month, along with the structure for a reorganized DEC along the lines of eight business units and four horizontal service groups.

Sessions at DECUS that have been been cut entirely because of either a change in product strategy or personnel include a seminar on SESS, a software maintenance program.

COS overhauls under pressure from frustrated users

CONTINUED FROM PAGE 1

of concern, [such as] how to take advantage of the OSI functionality while maintaining interoperability with TCP/IP or proprietary systems during the transition," added Augie Nevolo, chief telecommunications engineer at Pacific Gas & Electric Co. (PG&E).

COS, which counts the MAP/TOP Users Group and the User Alliance for Open Systems among its affiliates, is being broken up into a series of executive interest groups, whose vendor and user members will work together on a variety of issues, the COS spokeswoman said. One group will set about educating the public on standards-based "deployment issues, products and services," she added.

Other groups will work to accelerate implementation of standards-based interoperability in specific product areas, including telecommunications (via integrated Services Digital Network), electronic messaging, videoteleconferencing and routers.

The COS user/supplier forum will address TCP/IP-OSI interoperability and transition issues that are now harrying firms such as PG&E. The San Francisco-based utility has been aggressively implementing applications on TCP/IP while actively supporting its industry's efforts to standardize around OSI, Nevolo said. "So we have to find a way of coexisting and transitioning."

> A new COS interoperability test bed will provide services to users on various platforms.

Also of interest to would-be OSI migrators is a new COS interoperability test bed that will also "provide services to users on various platforms" in a production environment, a COS spokeswoman said. "So it will be a living interoperability lab."

COS will continue with its existing Mark program, which tests and certifies vendors' products as standards-compliant.

Also on the agenda at this week's COS meeting is a white paper produced by the Gosip Institute, outlining "how to glue the two architectures together so you can mix and match transport, service and application layers," said Dick Desjardins, director of the Silver Spring, Md., consulting company, which has no affiliation with the Government OSI Profile.

Another promising development slated for next year is the release of a draft Industry/Government Open Systems Specification, in which government, energy and manufacturing standards groups have come up with a consistent OSI standard based on the 1992 specification. Formerly, each organization had stabilized around a different OSI release.

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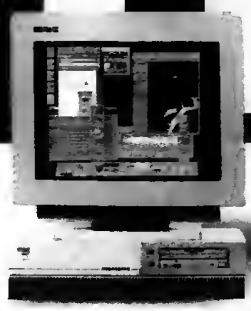

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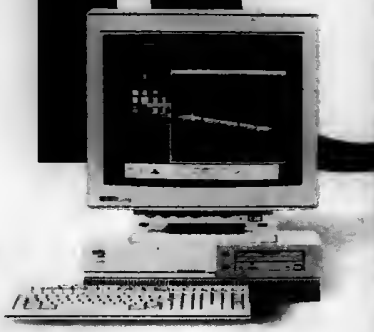

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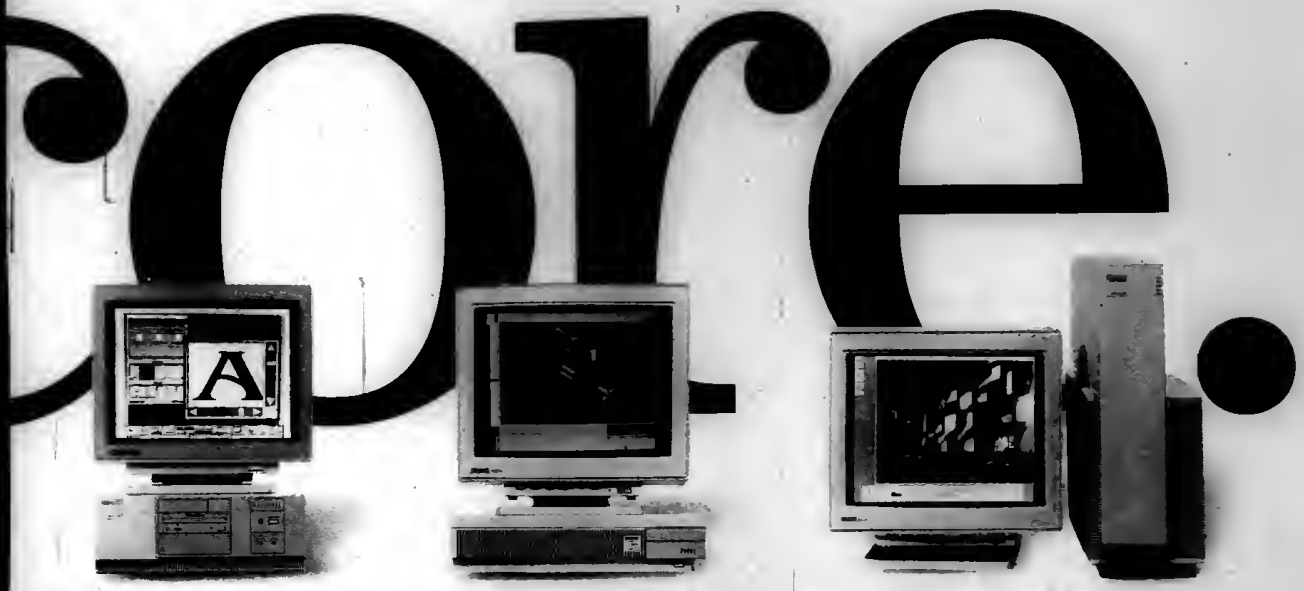

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HEWLETT PACKARD

Mega real estate auction counts on imaging

System will help bidders sort through thousands of documents related to $800M in failed S&L loans

By Ellis Booker
ATLANTA

Resolution Trust Corp. plans to sell some $800 million worth of charged-off consumer, residential and commercial real estate loans this week, disposing of 45,853 assets from 136 failed savings and loan associations.

The Thursday mega-auction — the largest of its kind ever held — will also feature for the first time an electronic document imaging system that will help bidders sort through the thousands of documents in each of the 72 packages of assets up for sale.

"When you have 45,000 assets, you just can't use hard copy — it would be a strategic nightmare," said Maurice Gilbert, an asset marketing specialist at Resolution Trust and the financial instruments auction coordinator at the government agency's office in Atlanta.

About six months ago, Gilbert said, Resolution Trust saw the potential of using optical storage and scanning to permit this kind of large-scale auction.

The imaging system will let interested investors examine the portfolios and conduct their due diligence without monopolizing the individual files, Gilbert explained.

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Beat at their own game

The $700,000 PC-based system was developed by JBS & Associates, Inc., a real estate consulting and auction company based in Chicago. JBS won the bid to handle this week's Resolution Trust auction, winning out over auction houses, many of which proposed using microfilm/microfiche to handle the massive number of documents.

The JBS system uses Microsoft Corp.'s Windows environment as a front end to an image database from Optika Imaging Systems, Inc. in Simi Valley, Calif.

> The system will register prospective buyers and alert attendees to the status of successful bids and, at the end of the day, generate custom zed purchase agreements for closing.

To support the application, about 45 Compaq Computer Corp. 386/33 workstations, each with 20-in., high-resolution monitors, have been moved onto the 22nd floor of the Atlanta Merchandise Mart, where the auction is scheduled to take place.

The configuration also includes a Compaq SystemPro 486/33 file server connected to a 30G-byte disk array and a 50G-byte optical disc jukebox. The scanning of the documents was accomplished with two Eastman Kodak Co. and five Bell & Howell Co. scanners, which were able to input more than 46,000 pages per eight-hour shift.

Event automation

In addition to its imaging component, the JBS system will automate other events at the auction, speeding buyers through the high-stakes proceedings.

For example, the system will register prospective buyers, alert attendees to the status of successful bids and, at the end of the day, generate customized purchase agreements for closing.

If the auction system performs as expected, Resolution Trust could conceivably make a lot more use of document imaging in the future, Gilbert said. He noted that Resolution Trust does not yet use an imaging system to support its own back-office operations.

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"Music to my ears."
Wolfgang Amadeus Mozart

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AT&T
The right choice.

Sun eyes group coding

By Maryfran Johnson
MOUNTAIN VIEW, CALIF

SunPro, a Sun Microsystems, Inc. subsidiary, last week introduced a suite of graphical code management tools that enable developers to work more easily in large or geographically dispersed workgroups.

The SPARCworks/TeamWare and ProWorks/TeamWare products, scheduled to be available next month on both Sun SPARCstation and Intel Corp. platforms, were designed to ease software version control, release integration and project-building steps. The new tools augment SunPro's family of SPARCworks and ProWorks development environments. Pricing starts at $995 for a single-user network license, with quantity discounts available for 10-, 25- and 100-license packages.

The code management tools are intended to "hit a part of the market that's been missed by us and others: easy-to-adopt parallel development tools for workgroups," said Jon Kannegaard, vice president and general manager at SunPro.

"In software development, collaborative work is the norm. This product fills the void between basic Unix source control utilities and expensive, complex configuration management systems," Kannegaard said.

The TeamWare tools reportedly let software developers distribute and coordinate their work in networked development environments. Teams can work on multiple releases at the same time, integrate change from many developers, reuse code and build project components in parallel.

TeamWare lineup

TeamWare includes four separate but integrated tools:

- **Code Manager** — for graphical project integration and release management.
- **VersionTool** — for inspecting and managing multiple versions of source files.
- **CheckPoint** — for capturing source file configurations for later retrieval.
- **ParallelMake** — for accelerating project builds.

One customer beta-test site is Kodak Digital Systems Center in Rochester, N.Y., which is using the TeamWare tools to develop software programs called raster image processors. Containing up to 200,000 lines of code each, the raster image processors handle the processing needed to produce high-quality printed images on advanced laser printers.

With the code management tools, three programming teams are working in parallel on multiple versions of the code — saving an estimated four months over the two-year life of the project.

"SPARCworks/TeamWare enables two or more engineers to work simultaneously on the same code, then merge it into a single source," said John DeHority, a senior software engineer at the Kodak center. "Given the heavy competition and pressure to market in this industry, that's a tremendous advantage."

The Kodak center is introducing the SunPro tools to additional development teams, with the aim of making the package a development standard for the 200-engineer staff, DeHority added.

Developers at Chicago-based Andersen Consulting are also using the TeamWare tools. They are building advanced applications for an engineering company client. More than 20 developers are working in parallel and reusing class libraries and objects, said Larry Podmolik, technical manager of the Andersen project.

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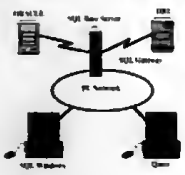

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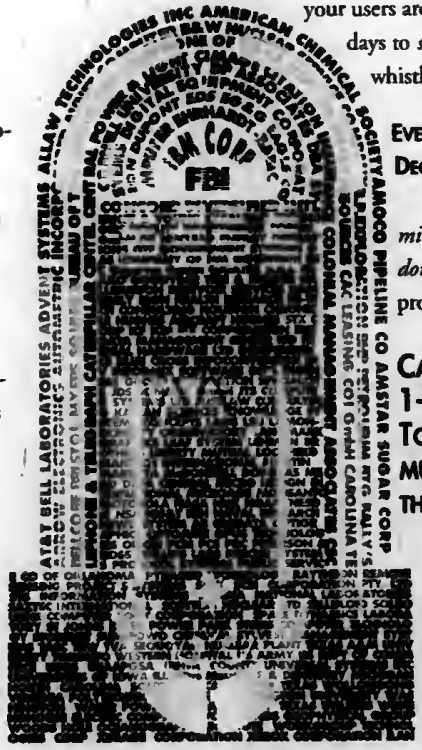

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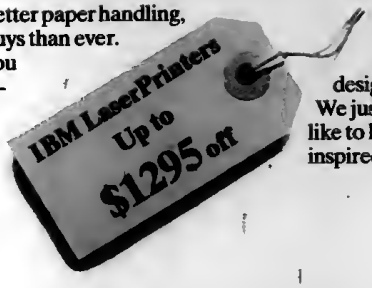

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ERS. PAGES AHEAD.

Tech Talk

Bellcore honors

Bellcore honored two of its own last month, awarding Dennis Egan and Leonard Forys the research and development organization's annual Fellow Award. Egan, director of information sciences research, was recognized for his work on Bellcore's SuperBook electronic browsing system; Forys, director of communications technology and traffic analysis, was noted for his work on "traffic synchronization."

Massive problem

Can massively parallel processing (MPP), a supercomputer architecture showing promise for some kinds of scientific calculations, help commercial customers? Yes, said scientists at Thinking Machines Corp., which last month demonstrated the ability of an MPP to compute predictions for both a 100,000-point "chaos" physics problem and a currency exchange rate problem composed of 30,000 individual exchange prices.

New storage

A spin-off company to commercialize the use of holography for data storage was announced last month by The Microelectronics and Computer Technology Corp. (MCC), the R&D consortium in Austin, Texas. The new company, Tamarack Storage Devices, Inc., plans to have its first products ready by the end of 1993. In holographic storage, data is recorded on film or crystals in the form of a three-dimensional hologram; with a multiplexing scheme, multiple holograms can occupy the same physical space. For instance, 30 to 50 pages can be recorded in a single crystallite about 1mm in diameter and a few millimeters long.

Tiny probe

IBM researchers have developed a probe for inspecting the smallest surfaces of integrated semiconductors without damaging them. The technique is a variation of scanning force microscopy, which measures the attractive force between the probe tip and the nearby chip surface.

PCMCIA gains new respect

Standard-based cards could replace current bus interfaces

By Michael Fitzgerald

THE BIGGEST LITTLE ACRONYM in town these days is PCMCIA, which stands for Personal Computer Memory Card International Association.

PCMCIA cards got their start as flash cards, programmable solid-state integrated circuits that could be used as random-access memory or other types of storage. The standards group that gave the flash card its name formed in 1989, and three years later the software and hardware standard is effectively in place.

"This hasn't been much of a user issue to date because cards haven't been available," said Leslie Fiering, an analyst at the Gartner Group, Inc. in Stamford, Conn. "It's been real for about six months, though, and you'll start to see a lot of products next year."

PCMCIA predictions

Total PCMCIA card sales*	
1991	2.7 MILLION UNITS
1992	3.6 MILLION UNITS
1993	7.3 MILLION UNITS
1994	13.1 MILLION UNITS
1995	21.2 MILLION UNITS

* Figures represent all cards in the credit-card size form factor. One-third to one-half of all cards sold today are PCMCIA-compliant, but by 1995, they will account for almost all cards sold.

Source: AP Research CW Chart: Janell Genovese

Because PCMCIA cards are small, use very little power and have no moving parts, they make ideal devices for the portable environment. PCMCIA cards include Type I, Type II and Type III, which measure 3.3mm, 5mm and 10.5mm in thickness, respectively. The Type I card has been used for memory, Type II for memory and I/O devices such as modems and Type III for larger I/O devices such as disk drives.

They offer users some interesting possibilities in terms of new products.

Some of the possible uses of PCMCIA technology are still being developed, but one that is likely to hit the market in 1993 combines software and hardware on the same card. For instance, a PCMCIA modem card could also include communications software bundled with it.

There is also the possibility that PCMCIA could replace the various

bus interfaces now in use, such as AT, Micro Channel Architecture and Extended Industry Standard Architecture. "We think this is a packaging and interface standard," said Robert M. Carberry, assistant general manager at IBM's Entry Systems Technology Division.

"PCMCIA is not a technology; it's a standard," agreed J. Michael O'Dell, vice president of systems development at Dell Computer Corp. O'Dell said PCMCIA has its primary place in portables right now but could work well in an expansion station format.

Carberry said IBM plans to produce a number of cards and is likely to build machines with both the PCMCIA and conventional buses in the future. He also said PCMCIA cards would fit in well with speech recognition in the future.

IBM is working on prototypes of its version of personal digital assistants that may use some speech recognition capabilities for simple commands such as opening files. Building these capabilities onto the tiny PCMCIA cards would give such handheld devices more storage space.

At Comdex/Fall '92, some 40 companies displayed products, and up to 100 cards were shown, according to Brendan McGuire, executive director of the PCMCIA.

The majority of these were flash memory cards, which hold up to 20M bytes of data, and communications products, primarily modems and fax/modems. Wireless modems and LAN adapters were also shown in the PCMCIA form factor, and some companies showed hard drives that fit directly into PCMCIA sockets.

Full deck

Most of the 100 or so PCMCIA cards demonstrated at Comdex/Fall '92 were of the flash memory variety. But showing the broader potential of this interface standard, other cards on display functioned as modems (wired and wireless), LAN adapters and hard drive interfaces.

While PCMCIA cards, including some popular application programs, have been available since 1990, the challenge has been to achieve interoperability. PCMCIA cards have to work like floppy disks and have not done this with any degree of consistency before.

Hardware vendors have generally not adopted PCMCIA drives in droves, either, because of interoperability concerns. Early adopters of PCMCIA technology include AST Research, Inc., which has two PCMCIA drives as well as a floppy in its Power Exec line of notebooks. NCR Corp.'s 3170 notebook and the Dell 320SLI have PCMCIA drives for input only.

Hardware support should increase, though, because the PCMCIA recently implemented new specifications for card services and socket services. These software initiatives will help establish important input standards and should improve card interoperability.

On the desktop, too

Even desktop computer makers see a use for the PCMCIA slots. IBM picked Comdex to show its next-generation PC, which had four PCMCIA slots — two in back and two in front. Also rumored to be working on PCMCIA-based desktop machines are Zenith Data Systems, Acer Corp. and NCR.

"I think the reason you're seeing such an explosion of products coming is that PCMCIA II is nailed down," Fiering said.

Still, as PCMCIA struggles to establish itself firmly as a standard, some efforts could give the industry pause.

Intel Corp. has announced an exchangeable card architecture (EXCA) effort, a variation on the PCMCIA standard. McGuire and Intel, which participates in PCMCIA, took pains to say that the EXCA effort does not compete with the PCMCIA standard but rather is an implementation of it that works for X86-based computers.

It remains to be seen, however, if non-EXCA cards will operate in the Intel environment, though, or how widespread EXCA will become.

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Lion vs. lamb

It's taken a very short time for outsourcing to shift from being a chief information officer's nightmare to a politically correct management tool. But I get the feeling most CIOs are making the transition grudgingly.

Last week's well-attended Outsourcing Conference in Boston pointedly highlighted the mixed emotions most information systems people are still feeling about this subject. The room was packed with IS executives who heard a lot of talk about the importance of partnering with outsourcers and the value of selectively outsourcing nonstrategic IS functions. They were told that their new role will be to manage outside contractors who will increasingly become integral parts of their organizations.

Yet there was also much talk about lengthy contract negotiations, hidden charges and the need for lawyers to go over every drop of ink on the pact between outsourcer and client. Gartner Group's Rita Terdiman warned of the practice of some outsourcers to slide in hidden incremental charges that can swell contract payments. She told of one contractor who tried to sneak in a clause committing the user to negotiate those payments only after the deal was signed. Some partnership.

And while there was no shortage of speakers from the user community to tell of the benefits of strategic outsourcing partnerships, an unsettling number of them didn't come from the IS world. "It's always the CFO who gives those speeches," grumbled one IS vice president who's attended several conferences on this subject. Other IS executives I met at the conference voiced similar sentiments.

So goes this awkward new dance between IS executives who have historically seen EDS as being in league with the devil and outsourcers who are trying to warm to the notion of working cheek by jowl with the very IS executives they would like to replace. The good news is that the relationship is improving. "In the last year, the number of questions I've received [from CIOs] on outsourcing has doubled if not tripled," Terdiman said. Selective outsourcing should indeed be an arrow in the IS quiver, and when applied selectively, it can help get runaway budgets under control.

But the idea that the typical CIO and the average outsourcing vendors are going to be drinking buddies anytime soon is pretty farfetched. Remember that outsourcing is still a business relationship from which the vendor stands to gain as more and more of the client's internal functions are handed over. As long as there are vendors whispering in the CFO's ear about all the money that could be saved by simply getting rid of the IS department, there will continue to be plenty of CIO suspicion.

In short, this talk of partnering is still mostly talk. Don't expect the lion and the lamb to lie down together anytime soon.

Paul Gillin, *Executive editor*

GUI Scorecard not a fair comparison

As a graphical user interface (GUI) user, I read with interest your Buyers' Scorecard on the four leading GUI choices [CW, Nov. 2]. However, it is hard for me to see what you actually compared.

The Open Software Foundation's Motif is not a complete GUI — it is a style guide and a tool kit. A complete Motif GUI comprises a Motif Window Manager, a desktop/file manager (such as X.desktop) and some user productivity tools (editor, mailer, etc.).

OpenLook is similar to Motif but on a Sun (the only place you can get it). It comes as part of Open Windows, which includes a great deal more.

From the results of your study, it would appear that the Motif users were using a whole variety of systems. In addition, the price quoted for Motif — $1,000 — is the price for the source code license.

Most users get Motif free on their hardware, or pay a few hundred dollars for a complete Motif environment on their Sun.

Next time you publish a similar scorecard, please compare apples with apples or specify more clearly what is being evaluated.

Ray Anderson
Founder/CEO
IXI Ltd.
San Ramon, Calif.

Quote misses the information boat

"Gurus offer pearls for IS pilgrims" [CW, Oct. 26] had a quote from Peter Drucker that left me perplexed: "IS professionals think that information is [their] job, but [their] job is data. Information is the user's job — [IS professionals] can only provide the raw material."

Granted, the total utility of any information, at any one point in time, is only realized by the end user of that information. This does not, however, relieve the IS professional of his primary responsibility: to act as a steward of pertinent information, not raw data, for his organization and to thoroughly understand the mechanisms for enhancing the utility of that information.

Drucker is correct in questioning the productivity gains, or lack of them, that have been brought about by relatively large information technology expenditures. His assertion that the solution to this problem will come about when IS professionals shirk all of their information management and stewardship functions is not correct, however.

The delegation of these functions to the end-user community will only serve to further degrade the organization's information resource, resulting not in productivity gains but greater productivity losses.

Nicholas V. Cross
Arcata, Calif.

Out of control

To paraphrase a recent shampoo commercial, "Don't hate me because I'm an auditor." However, the message espoused by Harvey R. Shrednick in the Viewpoint article "Dismantle the pyramid and share power" [CW, Nov. 9] is enough to strike terror in the hearts of any information systems control professional.

Shrednick states, "I can't ask the managers, supervisors and directors in the organization to give up control unless I'm willing to do the same." Like a ship without a helmsperson, over-empowered organizations can end up running in circles.

Isn't the real management challenge to determine where the hierarchical "chain of command" is inappropriate and make changes, rather than attempt a 180-degree turn at high speed?

What may appear effective to a systems development team at a given point in time may be totally ineffective from the overall organization perspective.

I'd suggest that Shrednick consider adding another word to his new vocabulary — guidance. Successful managers have been delegating, authorizing, enabling and permitting since time began.

Sounds like the major challenge for us auditors is to try to keep the senior officers from letting go of the helm and going overboard!

John D. Tongren
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60. Sys. Integrators/ VARs/Consulting Mgt.

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Quality can stop dirty data

Alastair McKeating

I didn't know whether to laugh or cry when I read about the actions IS managers are taking to correct data pollution [CW, Sept. 28]. Sixty percent of IS managers have dirty data, and the most common response is to replace problem equipment. That's like me blaming my golf clubs because I can't break 90.

The second most common solution is sampling and analyzing data. It's better, but it still doesn't solve the problem. Then comes forming a task force. Same thing. Next, there's backing up the bad data so we can get back into the same mess in the event of a disaster. 'Nuff said. It isn't until you get down to fifth place that anyone even talks about addressing data quality.

From my view, there are three main causes of bad data: redundancy, poor definition and poorly defined creation and collection processes.

I have worked in companies where data from the same form was input 15 to 20 times. Keying errors are inevitable in that kind of situation, but what's even more insidious is that the same business event is often recognized several times from the perspective of several interested parties.

Different departments frequently use different names or numbers for the same part. One department may recognize a customer as a corporate entity, while another thinks of each office as a separate customer.

A corollary of redundancy is poor definition. The meaning of data is rarely obvious, yet most

SCOTT MATTHEWS

data dictionaries are hard-pressed to provide more than one line of definition for each data element. Defining SALE DATE as "the date of a sale" is worse than useless because it gives the impression that the definition is understood and accepted.

To many people, especially programmers, this discussion is too esoteric. To them, a customer is merely a record identified by a six-digit number and as long as you use unique identifiers, the problem is solved. But randomly assigning a unique number to customers as they are added to the database does not prevent adding the same person several times.

What it finally comes down to is what we really mean by data quality. Is it enough simply to be consistent, or is there a higher test, such as reflecting reality?

In my experience, once a field has a value — "$33,500" or "Smith, Jane," it generally maintains that value, whether or not it tells the whole story or reflects changing facts.

What we need to ask is this: whether credit-card holders have received a raise since their application was approved or whether Jane changed her name when she married. To answer these questions, we need to examine the processes that we depend on to collect, enter and update data.

Keying errors will be the least of our problems if we continue to ask overburdened clerks to collect a multitude of demographic data while doing their regular jobs. Depending on employees and customers to fill out forms and update information isn't the answer either.

Salespeople are interested in making sales; filling out forms takes time. If we want to clean up our data, we have to be ready to assign the resources needed to define it and ensure its ongoing integrity.

McKeating is a data architect at The Prudential Assurance Co. in Kitchener, Ontario.

It's time to take vendors to task

LISTEN UP! *by* Elaine Bond

This is a call to action for all users. It's time for us to unite and speak up, to shoulder our fair share of the work load, to understand and define what we want from vendors, to reconcile our differences and to express our needs in a coherent, prioritized manner.

Why now? There are many reasons, but chief among them is the multiplication of both products and requirements.

Although multivendor computing architectures have been evolving for more than a decade, the last few years have brought a mind-boggling diversity of components and suppliers.

This is good news in that we are benefiting handsomely from the innovation, lower costs and functional richness that competition is compelling vendors to provide. It is also bad news, however, because with so many vendors, we seem to have lost the ability to influence what they deliver to us.

There is also no longer a single user point of view. The technology is no longer isolated in the data center, where it affects only a few IS professionals. It is widely deployed in our organizations. Now, technology touches many people directly. They have opinions and they have needs.

In the earlier, more serene world of massive mainframes and mighty minis, the IS professionals spoke for everyone, and vendors not only listened but also worked to resolve architectural and integration issues. Now the technology in our companies is widespread. Individual employees, business units, customers and suppliers all have an influence on what we deploy.

The architectures within our enterprises are moving toward an "any-to-any" infrastructure capability. This is cause for rejoicing because it means that within the foreseeable future, we will finally have a computing capability that permits the sharing of information or objects across and among organizations. But oh, what a challenge in integration and complexity!

One step at a time

This "any-to-any" evolution (some might say "revolution") is, lamentably, happening in an ad hoc manner: one user at a time, one application at a time, one location or region at a time. Not a very pretty or efficient approach, and unfortunately, a rather painful process. Factor in the rate of technology change, and it becomes downright ugly.

Is there a better way?

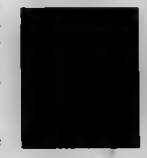
Theoretically, a robust, responsive, energetic standards process could help enormously. But there are many standards groups, and they (understandably) inch out effective results, which take even longer to be reflected in products. There is also a question as to when to standardize on what, if technology is changing rapidly.

But an even bigger issue is that standardizers tend to be technically skilled people and rarely represent business or senior levels of user management and their pragmatic concerns.

The reality is that users are getting what vendors see fit to provide, and that is no longer enough. But if we want to change that reality, we have to speak up.

If we can say what we want and say it in convincing volume, vendors will respond. Competition will assure that. I'll guarantee some vendor right now is avidly seeking such opportunities.

My company feels strongly enough about the validity and importance of defining user needs for vendors that it is allowing me, in my own "distinctive" style, to help organize an independent effort to achieve it. We founders call it Open Users Recommended Solutions, or OURS, and it is a don't-miss opportunity for both users and vendors to collaborate positively — and profitably.



Is anyone out there listening?

Bond is a Chase fellow and senior technology consultant at The Chase Manhattan Bank NA, where she previously served as senior vice president, corporate systems executive, for 11 years. Bond is a founder of the recently formed user advocacy group called Open Users Recommended Solutions.

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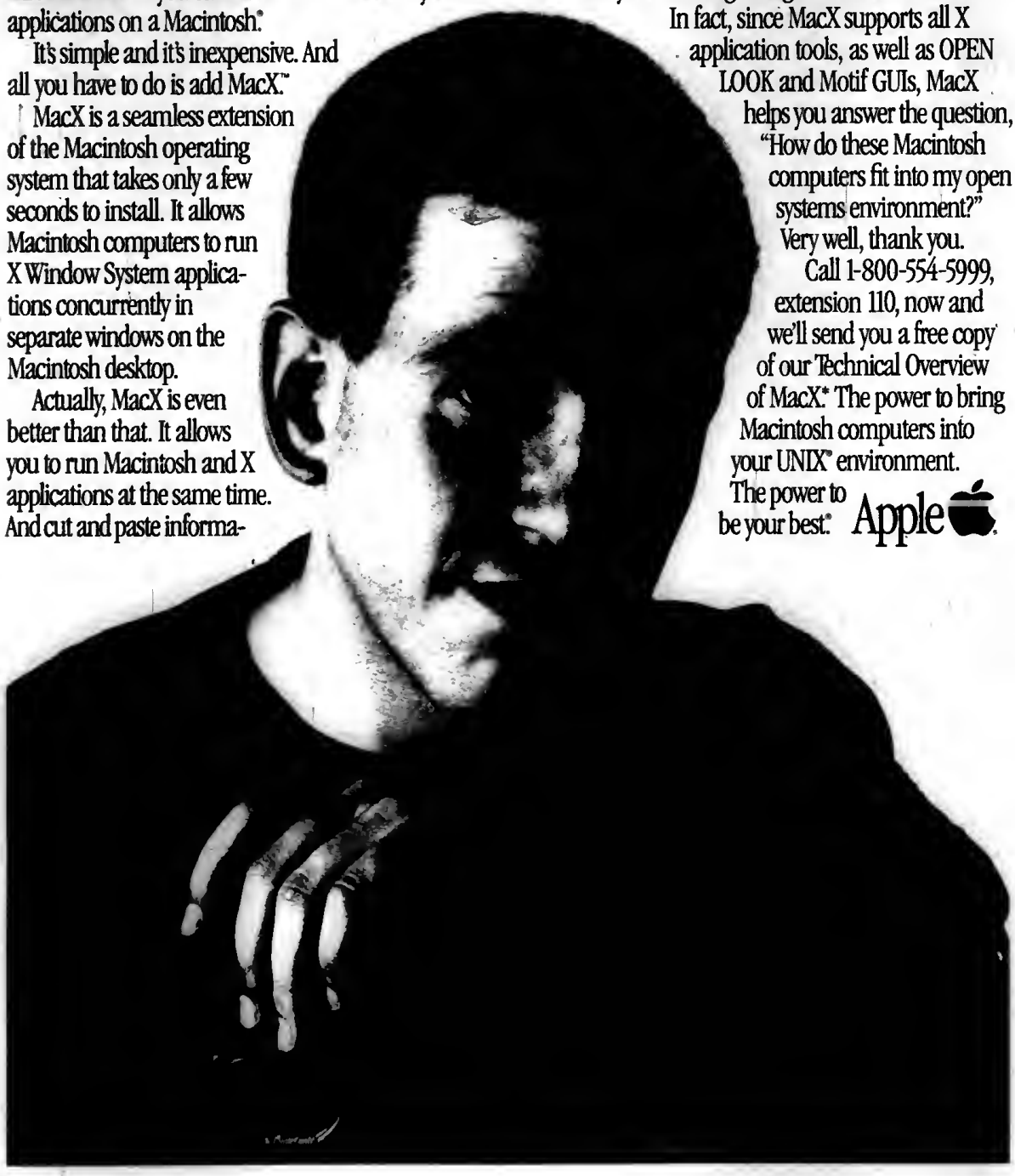

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Charles Babcock

Hard lessons

I carry with me a June 19, 1968, issue of *Computerworld*, all 16 pages of it, as a reminder of how changes sweep through the computer industry. The Page One headline reads, "First patent issued for software, full implications not yet known."

The first software patent, issued to Martin Goetz, vice president of Applied Data Research, marked the birth of the independent software industry.

The next two decades saw rapid growth, with software companies racking up 25% to 30% annual revenue increases. Quickly becoming giants were Cullinet Software, Management Science America, McCormack & Dodge, Software AG, Computer Associates International, Applied Data Research, Cincom Systems and Information Builders. With the exception of a young upstart named Oracle Corp., they were all mainframe software companies.

These firms, with their continuing investment in software development, were an industry resource. They extended the basic system software provided by IBM and added a rich catalog of applications.

The sudden demise of many of them in the second half of the 1980s contains lessons on the strengths and weaknesses of our industry.

By the mid-1980s, the presence of millions of PCs had begun to impact IS operations, so it is easy to conclude that these companies were destined to go the way of the mainframe — doomed to be downsized, replaced by newcomers or just out. Yet if this were true, then all the mainframe companies would have suffered the same fate, when in fact several survive and prosper.

Indeed, for those producing mainframe software, business is good and several newcomers are larger than the former giants. Examples are Legent, which is now a $350 million a year company, and BMC in Sugarland, Texas, a $400 million-plus company.

The survivors found strength in a diversified product line and moved toward multivendor capability at an early date. They extended their core products to the DEC VAX, Unix workstations and sometimes to MS-DOS PCs. By the mid-1980s, many of the independents were impressed by Oracle's rapid growth and the established clout of Cullinet software.

Software AG with Adabas, Cincom Systems with Supra, Applied Data Research with DatacomDB and Cullinet with the new, improved IDMS-R all made bids for the mainframe database market, as did Oracle. All this activity presupposed a quiescent IBM, which instead launched DB2. Presumption was punished by stalled or declining revenue.

What had looked like a sure thing had become a trap, and not everyone escaped. Applied Data Research was acquired first by Ameritech, then by CA, which also picked up a much weakened Cullinet.

One survivor, Software AG, had a database system with differentiating features and a fourth-generation language, Natural, which could run in several environments. It was also privately held, allowing it to withstand a slowdown in database revenue while reinvesting in Natural.

Another survivor, Cincom Systems, had a strong line of multivendor manufacturing software to fall back on, and it, too, remains privately held.

CA, a dabbler in the database market, benefited from the weakened condition of the mainframe firms by acquiring several.

All of these companies thrived when they developed software out of their core expertise, and the widely varying product lines reflected the interest and skill sets of young companies. As they matured, they relied less on their own instincts and more on what proved to be a common analysis of where future revenue would be found, to their own detriment.

The survivors found ways to extend what they could do well beyond the IBM mainframe, and in this way they served their customers best and gained a continued lease on life.

Babcock is *Computerworld*'s technical editor.

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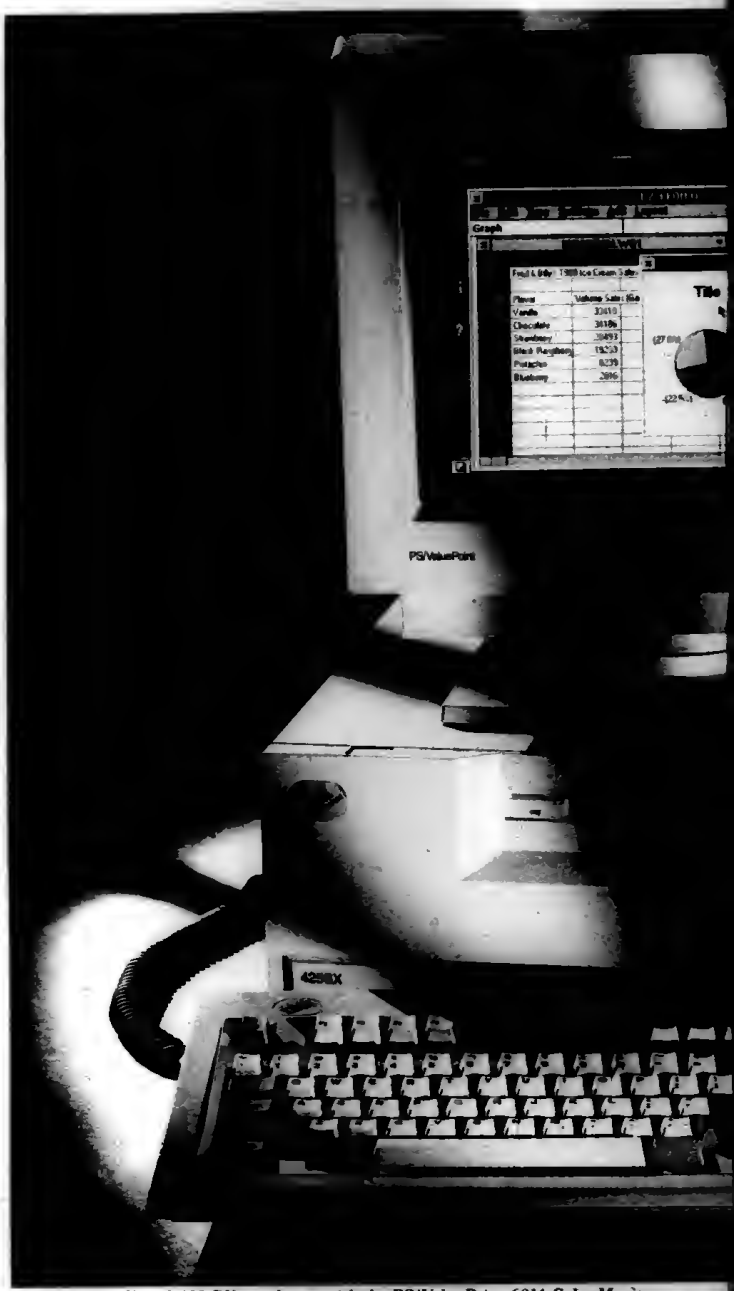

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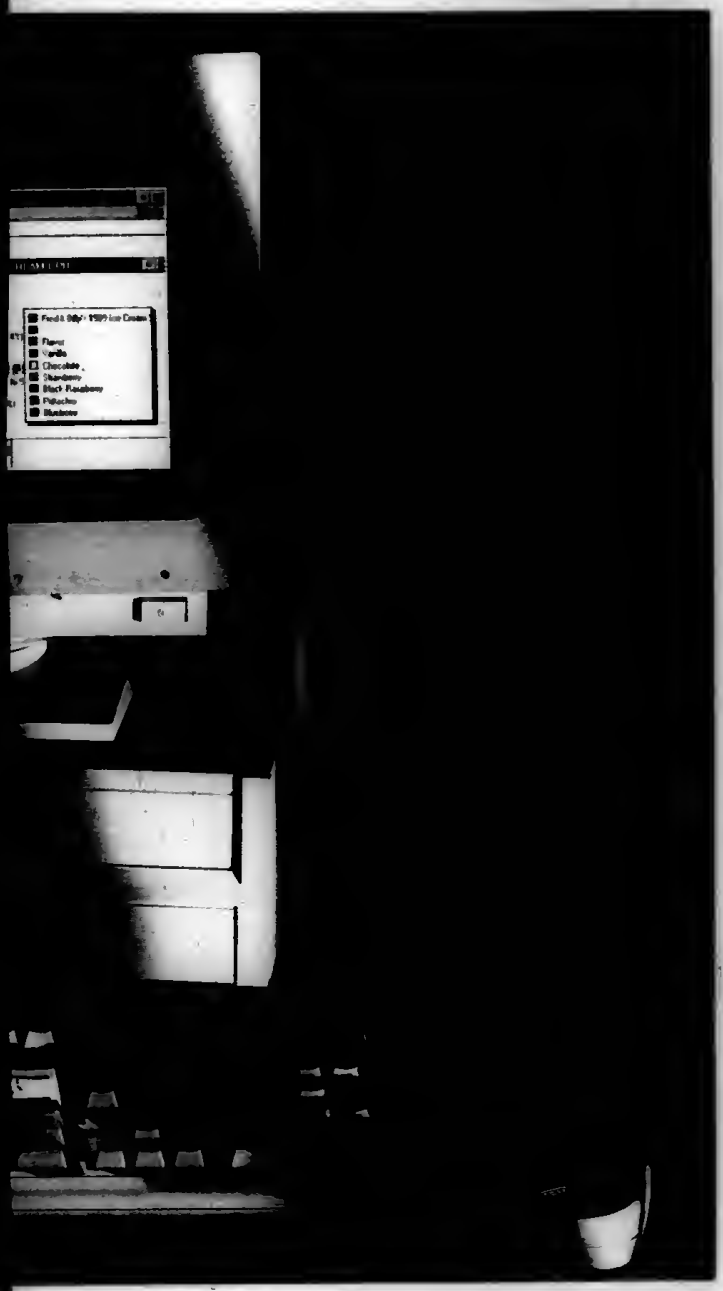

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White Paper

Sales Force Automation

These days, it takes more than a hat full of tricks to boost sales.

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GE Information Services

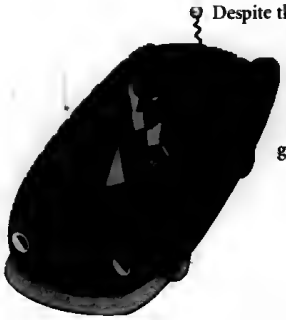
Introduction

It is somewhat surprising to find that sales departments, which directly account for the revenues that drive so many companies, are among the last to receive enabling information technologies. Perhaps it is because sales men and women are often able to tap their own internal resources in times of need.

No mater how talented these indivuduals may be, however, they can improve their performance through the use of Sales Force Automation (SFA). SFA, which includes automated sales support and the integration of sales data with other corporate information, is taking advantage of current computing trends, such as open systems, group collaboration and portable computing, to keep sales people better informed then ever.

Portable computing, in particular, is a bulwark of SFA. Although the bulk and weight of earlier models discouraged all but the most slavish devotees, newer versions — most notably notebook computers — conveniently lend themselves to the requirements of mobile sales forces.

In fact, sales managers interviewed by IDC claim that the new generation of notebooks is enabling them to set unprecedented strategies for the widespread integration of automation.



Despite the gains, however, SFA is still struggling to overcome poor market awareness, general apathy and lack of technical sophistication. The first of these three problems is rapidly improving. Apathy is also giving way as organizations increasingly realize the competitive edge they can gain by empowering their sales forces with SFA.

This White Paper was written independently of the Computerworld *editorial department by Clare Gillan, manager of the Applications and Information Access Program with IDC.*

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For more information on the White Paper Program, please call 508-879-0700.

MOTE

The convergence of economic issues and technological advancements is moving the sales function into the IS limelight. In the wake of this convergence, automated sales support and the integration of sales data with other corporate information — Sales Force Automation (SFA) — have become necessary tools for many companies.

Other tools — lightweight portable computers, intuitive graphical user interfaces, open access to heterogeneous data, and advances in communication technology — are all stimulating broad demand for SFA applications considered too complicated for previous technologies.

Despite this demand, however, sales has been one of the least automated areas in business. That is finally changing as tough economic conditions force companies to reduce costs, optimize resources and improve quality and service. Now companies are turning their attention not

only to sales, but also to related functions such as customer service.

The benefits of a properly implemented sales system go well beyond increasing a sales person's productivity. Sales data is critical to the decision-making process at all organizational levels, from the executive making corporate decisions to the sales representative canvassing a territory.

To date, few companies have successfully implemented comprehensive SFA systems. IDC attributes this low activity to a lack of resources, awareness and know-how among many prospective users. Over the next two to three years that will change as radical advancements are made in technology aimed at improving sales productivity and the quality of customer relationships.

KEY FEATURES OF SFA

SFA encompasses technologies tailored to the sales function, in particular, providing field sales people the necessary automated tools to increase their productivity. Attributes of SFA include territory management, e.g., a customer database, electronic calendar/tickler files, integrated word processing with mail-merge capability, and reporting. More advanced systems may support sales forecasting, two-way communication between the field and group offices, links to external and corporate data, and a high level of reporting and analysis.

The most valuable SFA systems do more than increase the productivity of the individual sales person. The truly influencial SFA systems integrate with corporate information systems and facilitate the flow of information across sales and related functions such as marketing or customer service.

ENTERPRISE INTEGRATION

The currently emerging generation of business applications is best referred to as "enterprise integration." The dominant trend of this generation is the act of bringing information and people together. Applications facilitate communication among people and the integration of disparate information located in corporate, departmental and personal databases. Key technologies enabling this movement include:

• Open systems - Open systems promote the deployment of SQL-based applications, data access middleware for access to heterogeneous databases and hardware platforms, and Unix for platform portability.

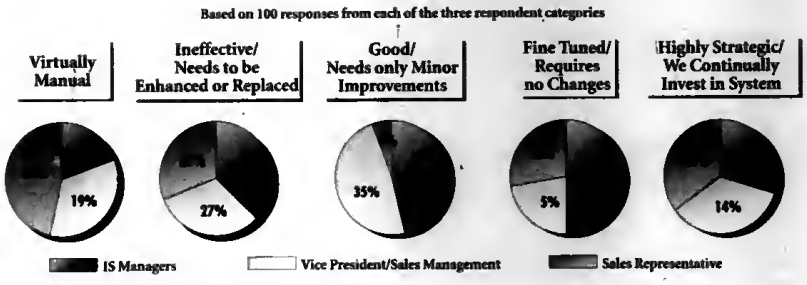
• Group collaboration - Group collaboration is characterized by integrated office systems — in particular electronic mail — for communicating and coordinating with others; groupware applications like Lotus Notes, which allows people to share hard and soft information: and workflow applications that optimize processes involving multiple people.

• Distributed information - Critical characteristics of this category include client-server technologies, LANs, WANs and portable computers. Wireless communications, allowing access to remote computers without a modem, will also become important as its costs drop.

Sales organizations stand to benefit from these technologies, particularly in companies that embrace the concept of team selling. A recent IDC study indicates that 73% of IS managers at large organizations consider sales to be an integrated part of their corporate IT user community.

THE CURRENT STATUS OF SFA

There are three primary stumbling blocks to SFA: poor market awareness, apathy and a lack of sophisticated technology. Poor market awareness is a problem despite the fact that nearly 100 U.S. vendors provide SFA packages. Unfortunately, the majority of these vendors are small companies that lack marketing muscle. Since active market demand is often a function of marketing

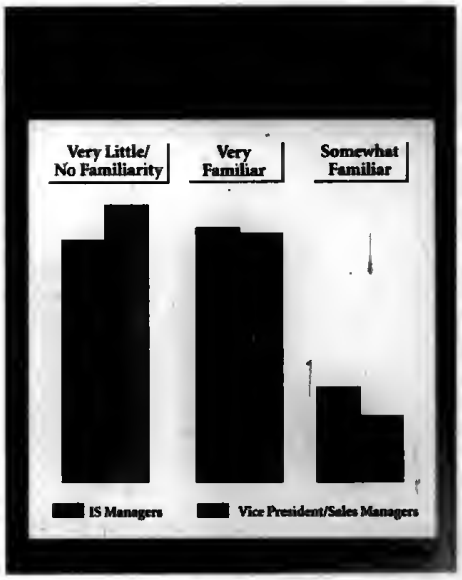


Source: International Data Corp.

dollars spent, corporate focus on SFA has been relatively low.

Lack of interest in this application came partly from the fact that the 1980s was a good decade for business in general. So long as the sales function met its quotas, increasing sales productivity was not a broad market issue. Other business issues, such as controlling inventory overhead and more quickly informing management on its previous month's performance, took precedence.

Perhaps the biggest deterrent to SFA was the lack of sophisticated technology. Only recently have the necessary tools successful SFA implementations require become available. These technologies include lightweight and affordable portable computers, such as Apple's Macintosh Powerbook, intuitive graphical user interfaces and flexible integrated applications. More companies are using them as they attempt to utilize every possible weapon in their competitive arsenals.



SFA ACTIVITY AMONG U.S. COMPANIES

IDC recently interviewed 100 large U.S. companies (5,000 or more employees) regarding their use of sales technology. The participants were senior IS people, vice presidents and senior managers of sales operations and sales people — the three groups generally involved in successful SFA projects.

More than half of the companies consider themselves to be somewhere between "efficient" and "bleeding edge" when asked how they apply IT toward increasing performance and competiveness. IDC estimates that less than 15% of sales-support systems are highly strategic, i.e., instrumental in helping the sales organization and the overall corporation meet or set objectives.

Seventy-five percent of the surveyed companies are in manufacturing; the balance are spread across other non-government, non-education industries. Sixty-six percent of the sales forces are centrally organized, while the others operate on a distributed structure. Fifty percent of the companies rely completely on direct sales people. Another 35% claims more than 40% of their staff focuses on direct sales. Twenty-seven percent have less than 10 sales people, while 38% have more than 10 but less than 50. Only 12 sites have more than 500.

Most large companies support their sales effort with some level of computerized technology. These sales support systems vary in sophistication. Some are composed of a single terminal located in the sales area. This terminal is used to send sales data to a corporate database or a PC in the sales manager's office. It may run a spreadsheet, calculate commission, adjust quotas or forecast sales activity. Although these systems are used in the sales area, their back-office focus and limited integration with a sales strategy strongly reduce their effectiveness.

Investment in SFA is picking up. Forty eight percent of the IS managers interviewed report that they are actively improving automation in the sales area; another 34% are in the planning stages. IDC attributes this increased SFA activity to a reversal of the three previously negative factors holding SFA in check: poor market awareness, apathy and the lack of sophisticated technology.

PORTABLE COMPUTING

Portable computing is one the strongest drivers of current SFA activity. Clearly, the bulk and weight of first-generation portables deterred their use in SFA. Even now, despite the advances made in portable computer technology, about 35% of sales organizations in large companies still do not have any portable computers. Of those that do, portables are only used by about one-third of the sales representatives and managers.

This is changing as the allure of portables grows while prices and sizes shrink. Consider Apple's Mac Portable: In August 1991, it sold at an average street price of $3,170 and included 2M bytes of RAM, a 40M byte hard drive and 16 MHz clock speed. The Mac portables have since been succeeded by Apple's Powerbook line of notebook computers. Today the top-of-the-line Powerbook 180 weighs just 6.8 pounds, comes with 4M bytes of RAM, up to a 120M byte hard drive, a 33 MHz processor, and sells for an average street price of $3,595.

Although the price gap between desktop computers and portable computers has not disappeared, it is shrinking to the point where it is no longer an automatic impediment for companies that are serious about automating field sales.

The hard way.

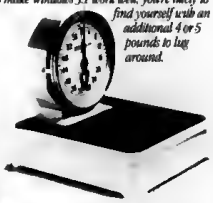
Extra memory, $210.* *Most notebook computers in use today simply aren't fast enough to make Windows 3.1 practical. And many that are fast enough may require extra memory, which can add hundreds of dollars to their price tags.*

Clip-on trackball, $172. *If you're going to try to use Windows 3.1 on many portable computers, you may have to plug this in and clip it onto the side of your computer. (Be careful not to catch the cord in your airplane tray.)*

New programs, $506 each. *Unless you buy programs specifically designed for Windows 3.1, you'll have to use conventional character-based programs and their awkward commands.*

Fax/data modem, $142. *The ability to communicate on the road is what makes a notebook PC really valuable. So you'll have to pack one of these. Once you get back to the office, be prepared to shell out another $138 to update the files on your desktop PC, and over $500 just to access network file servers and printers.*

Added weight. *Many notebook computers may claim to weigh less than 7 pounds; but by the time you add all the components you need to make Windows 3.1 work well, you're likely to find yourself with an additional 4 or 5 pounds to lug around.*



Your time, name your price. *Fiddling around with MS-DOS or Windows 3.1 on the road can cost you plenty of time. How much is yours worth?*

Ordinary notebook, $2,497. *The typical notebook computer of today was designed to run DOS only, not Windows 3.1. It doesn't have enough memory, speed or screen brightness, and its screen isn't fast enough for high-quality graphical computing.*

The couch seat factor. *If you want to run Windows 3.1 on most portable computers you'll find that you need a front-mounted keyboard and a side-mounted trackball or mouse. What you won't find is enough room on an airplane tray to hold it all.*

Comfort *is something most notebook computer ads never talk about. Because, truth is, they're not very comfortable to use. Which may explain why they don't win awards for being well designed. (PowerBook, of course, has won more design awards than all other notebook computers combined.)*

Instruction manual, 2 pounds. *There's nothing like forgetting a DOS command when you're 2,000 miles from home, so you may want to carry a manual with you. And since Windows 3.1 is based on DOS, you'll definitely want instructions handy.*

If you're looking for a notebook computer that's easy to

*The price and all the prices noted here reflect average Manufacturer's Suggested Retail Prices. **Comparisons are based on a 1991 independent research study conducted by Ingram Laboratories that rated a variety of personal computers running applications available for both the Macintosh and Microsoft Windows 3.0. registered trademark and Windows is a trademark of Microsoft Corporation. (Inc.) is a registered trademark of Inter-national Business Machines Corporation. WIPC is a registered trademark of Ingram Solutions Inc. WordPerfect is a registered trademark of WordPerfect Corporation. This ad was created using Macintosh computers.*

The easy way.

Blistering speed. *Because Apple® Macintosh computers are optimized for graphical computing, PowerBook® can significantly outperform comparably priced notebook computers running Windows™*

Consistent applications. *Every PowerBook runs thousands of Macintosh programs (including Lotus 1-2-3 and WordPerfect) that all work in the same consistent, intuitive way. You learn one, you know the basics of all of them.*

Built-in Balloon Help. *Point at what you want to know about, and your Macintosh will tell you what it's for. So you can leave your manual in a desk drawer at home.*

Built-in networking. *Plug your PowerBook into an AppleTalk® network and conveniently access all network resources—printers, file servers, e-mail, even other networks from Novell, IBM and Digital.*

AppleTalk Remote Access. *This remarkable software is an option with every Macintosh PowerBook. It not only allows you to access all the files on a modem-equipped Macintosh at your office or at home, it also gives you complete access to your network—printers, files, file servers, e-mail—from anywhere there's a phone.*

Built-in fax/data modem. *With this option, you can send your work directly to a fax machine or access e-mail from almost any telephone anywhere you happen to be. Just plug the phone cord into the back of the PowerBook.*

Built-in file sharing. *On most notebook computers, sharing information with a desktop computer is virtually impossible. But every PowerBook has powerful file sharing built in. So you can easily connect your PowerBook to a desktop Mac® or another PowerBook and copy files from one computer to the other.*

Built-in peripheral support. *Like every Macintosh, PowerBook lets you add up to six external hard drives, CD-ROM drives, scanners or other peripherals simply by plugging them in.*

Palm rests. *Working on the road isn't like working at your desk. So Apple designers provided a place to rest your hands, making it much easier and more comfortable to work in tight quarters—such as a middle seat on an airplane.*

Integrated trackball. *Everything about Macintosh computers is designed to make it easy for you to work. In the case of PowerBook, the pointing device is integrated into the computer. There's nothing to hook up or clip on. Open it up and you're ready to go. (It's comfortable whether you're left or right-handed, too.)*

It's compatible. *Like every Macintosh, PowerBook is compatible with the personal computers you use at the office. It can read from and write to floppy disks from MS-DOS or OS/2 PCs, or even run DOS software using programs such as SoftPC.*

Built-in sales. *The ease of Macintosh makes PowerBook the ideal tool for salespeople on the road. For information on how you can automate your sales force, call 800-635-9550, ext. 125. We'll send you our free brochure,* Macintosh in Sales.

use, there are basically only two ways you can go.

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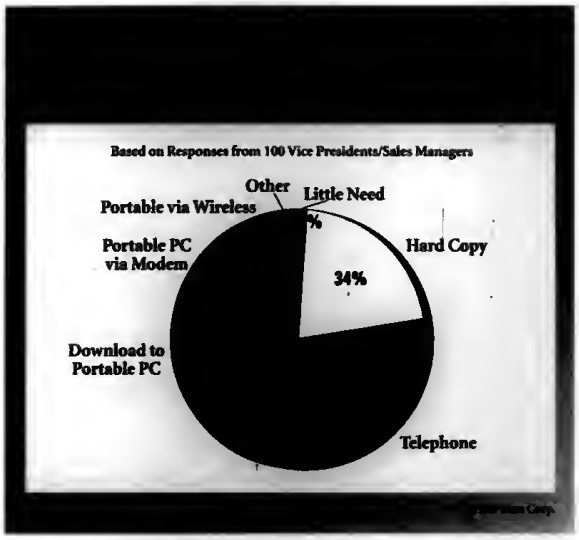
THE VIRTUAL OFFICE

Enthusiasm will spread as laggard companies come up against competitors armed with a "virtual office," which is essentially a portable computer equipped with all the information and function a sales representative needs inside or outside the office. For example, portables in the SFA environment hold all customer account information, order forms, pricing information, electronic sales presentations and electronic mail access. A modem allows the representative to download or interact with information from the home office. A modem and facsimile software enable the representative to use any available facsimile machine as a substitute for the printer. However, portable printers are available from a number of vendors.

This virtual office concept allows sales reps to function on a sales call as efficiently as if all their prospects had come to their office. Ultimately, such a properly planned and implemented system will generate more and higher quality sales calls. The virtual office implies corporate integration, but corporate integration requires a large investment of hard and soft (time and resources) dollars. There are less expeosive, unintegrated approaches, but they may be insufficient when applied to a highly competitive situation.

IDC asked sales reps about their views of portable computers as a sales support tool. Forty-five percent indicate tbat portables only enhance sales performance if they are part of an automated and integrated sales automation effort. Integration becomes particularly important in a team selling environment. Notably, 40% agree that even using portables as personal tools supporting daily sales-related activities would contribute to increased performance.

Many companies choose to start at this personal level. However, it is important that they do not get caught in a dead-end strategy. As the system grows, back-end data servers and integration with other corporate information become more important. Portable computer users must adapt to such changes.



REMOTE ACCESS TO CORPORATE INFORMATION

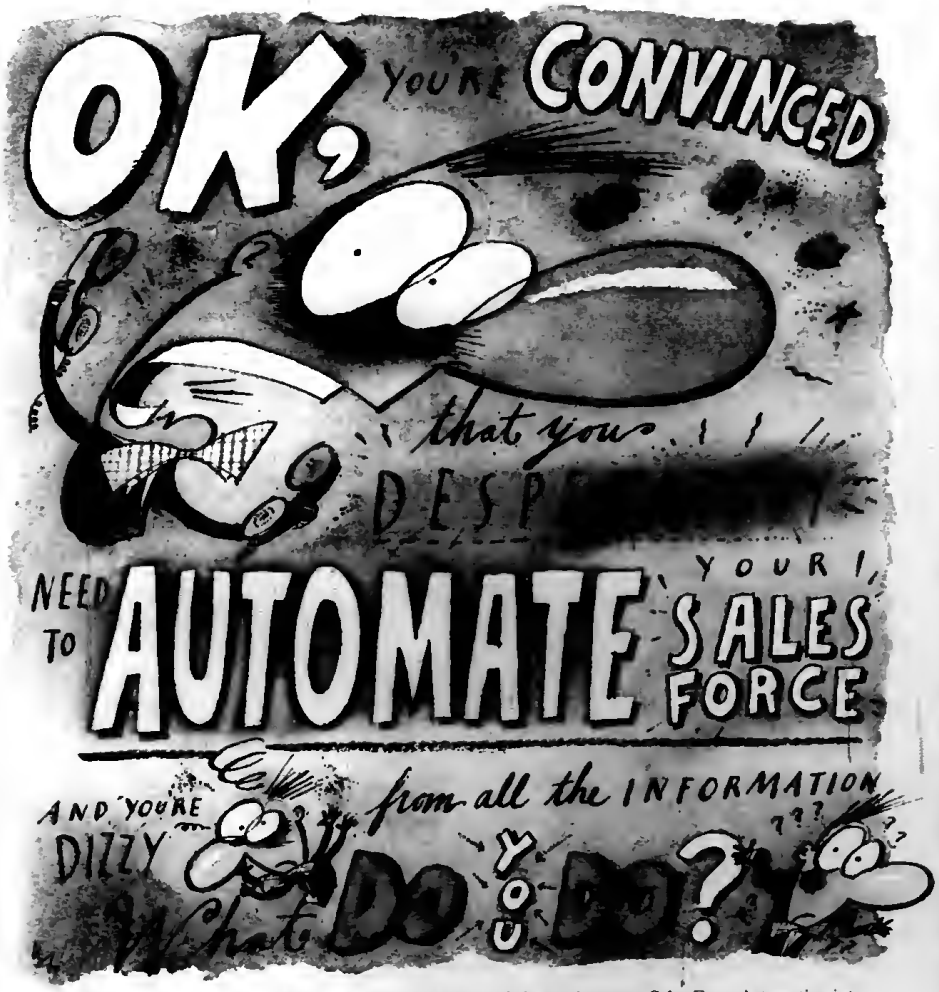
Not suprisingly, most reps still use the telephone to access sales-related information located back at the office. This practice will decrease dramatically over the next few years. Seventy percent of the sales managers report to IDC that their reps access this information by telephone today. The second most common data access method is downloading via on-line portable computer communication. Within three years, this method will be number one. With technology such as AppleTalk Remote Access, users can act as end nodes on the network no matter what their location, whether at home or via cellular connection. Printouts are now the third most popular information access method.

While SFA vendors frequently compete against internal development, they also run up against more general packaged business applications that offer sales-automation capabilities. Examples of non-sales-specific solutions include spreadsheets, word processors and Personal Information Managers (PIMs).

SFA vendors have begun to realize that the opportunity lies not in competing with generalized solutions, but in leveraging them. For instance, more mature SFA solutions initially included a proprietary word processor and a proprietary electronic mail capability, largely because de facto application standards had not yet emerged.

Since that time, many of these SFA packages have been altered, allowing users to integrate popular word processing and electronic mail products such as Microsoft Word, WordPerfect and Lotus's cc:Mail. Leveraging third-party technology allows SFA vendors to be more focused on the value-added features, such as optimizing profit margins and coordinating workflow in team selling environments.

SFA software vendors continue to evangelize the market. About 40% of IS and sales managers report that they are being consistently contacted by vendors about SFA solutions. Another 20% report that they have been contacted by a small number of vendors, but that these vendors called infrequently. Despite the various contacts between users and vendors, more than 40% of IS and sales



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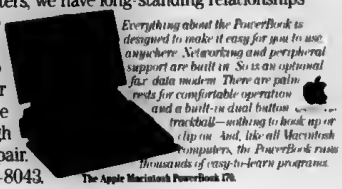

Everything about the PowerBook is designed to make it easy for you to use anywhere. Networking and peripheral support are built in. So is an optional fax/data modem. There are palm rests for comfortable operation and a built-in dual button trackball—nothing to hook up or clip on. And, like all Macintosh computers, the PowerBook runs thousands of easy-to-learn programs.

The Apple Macintosh PowerBook 170.

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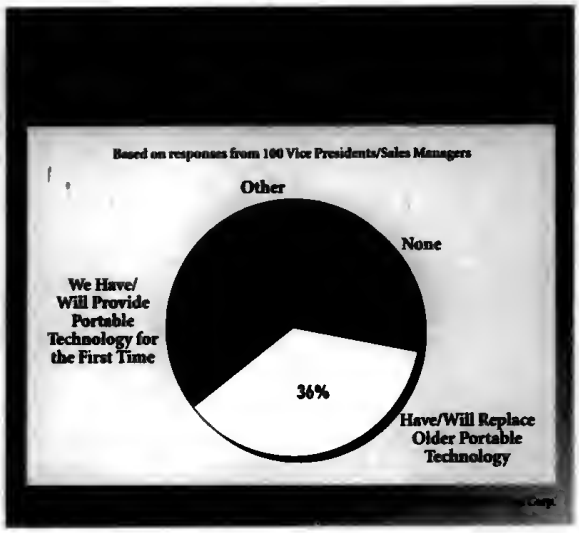

managers indicate they have little or no familiarity with the range of available SFA solutions.

APPLICATION WISH LIST

IDC asked each of three groups (IS, sales management, and sales representatives) to identify the three areas of sales they would most like to automate if their management gave them a blank check. IS says it would focus on sales analysis and remote access to corporate data. Sales management and sales reps agree that account management would be their number one investment.When asked what area they would automate last, all three groups indicate telemarketing. Customer presentations and external database access also rank low. The importance of customer presentations could increase now with the advent of multimedia capability on notebooks such as the Apple Powerbook.

INTEGRATION WITH OTHER INFORMATION

The newfound emphasis on team selling, particularly among companies selling into large accounts, is boosting SFA. Team compositions vary. For instance, the team might be composed of multiple sales people, or a sales executive and a technical engineer. It may also involve people from various parts of the company, i.e., customer service, marketing, engineering and sales. Whether or not team selling has been formalized in a given company, integrating the sales information system with other information systems not only benefits the overall organization, but also enables individual reps to simulate the shared-knowledge environment offered by team selling.

Today, more than 75% of SFA systems in large companies are integrated with order processing and general accounting systems. Seventy percent of these large-company SFA systems are integrated with customer service. IS, sales management and sales reps all agree that order processing, customer service and price/specification data are the three most important areas for SFA integration.

Frequently, companies do not consider what areas besides sales can benefit from sales data. For instance, executive information systems provide senior management easy access to critical business information from a variety of data sources. Sales information should be included io the mix. Although financial data is the most common source of information, sales and marketing data are also vitally important.

It is interesting to compare views on how IS management, sales management and sales reps view the automation level of their current sales system. IDC interviewed representatives from all three groups across 30 companies to find out. Teo percent of IS management feels their sales support system is manual compared with 23% of sales management and 30% of sales reps. By comparison, 17% of IS report that the sales support system is highly strategic, compared with 13% of sales management and 7% of sales reps. Most people, regardless of group, report that their system requires some level of improvement. Only a haodful of people report full satisfaction.

INFLUENCERS AND DECISION MAKERS

Just who drives an SFA project? Vendors report that the initiators range from an individual sales person to IS vice presidents, noting that the sales manager is typically the most influential. IS management, sales management and field sales people agree that IS, marketing management and sales managemeot are the most active SFA decision makers.

Senior corporate management generally observes SFA projects without intervening. The IDC-interviewed groups all agree that the actual users of the SFA system are more involved in the selection, design aod implementation processes than the CEO. Despite this, CEOs generally sign off on these expensive projects.

In smaller companies, or even in smaller-scale implementations, the decision-making roles may change. For instance, in a smaller company, a sales manager or senior sales rep may be able to drive an SFA project from beginning to end. It should be noted that these projects are relatively simple, often using off-the-shelf single user software.

Storage Technology Tightens Up With SFA

The Company

Storage Technology is a $1.5 billion manufacturer and supplier of storage systems to computer manufacturers. The firm describes its selling style as "relationship selling." Sales cycles often take up to one year, requiring an average of 50 on-site sales calls. It has about 200 field sales people in North America and more than 85% of its sales volume is direct.

The Mission

"Apollo" was the name given to the Sales Force Automation (SFA) system developed by John Williams and Tom Campbell. Williams, vice president of North Amercian field operations, conceived of the system and Campbell was made project manager in February 1991. He was given eight months to have the system up and running. This aggressive deadline was driven by Storage Technology's anticipated launch of a major new product line.

Hardware and Software Selection

Prior to this project, the sales force bad limited exposure to computer automation. Campbell involved the regional sales support managers and one sales rep from each of six regions in evaluating alternatives. They agreed that portable computers — notebook computers in particular — were a necessary component.

Before committing to a specific notebook configuration, Campbell and his team investigated a variety of off-the-shelf SFA software solutions. They concluded that, considering the cost of packaged software and the specific functions they desired, it would be better to design and build their own single-user system. They also saw this as a way to increase their strategic advantage, because it would make their system more difficult to duplicate.

The company evaluated a number of notebook computers during a period preceding the introduction of Apple Computer's Powerbook notebook model. Under terms of non-disclosure, Apple representatives described Powerbook to Storage Technology's SFA project team. Based on that presentation, Campbell and his team selected the Powerbook. They were particularly attracted to the quick prototyping software facilities that would enable them to deliver a highly functional and easy-to-use application within four months.

The team selected Fourth Dimension, a Macintosh-compatible database application, as the software development platform for their custom application. Microsoft Office was chosen to provide integrated word processing, spreadsheet and presentation graphics. The storage systems company selected an external messaging service as an interim solution for remote communications and electronic mail.

Consulting Assistance

Storage Technology commissioned Andersen Consulting to develop the functional design specifications and data conversion plans, handle project management and training materials, and the actual training. The objective was to have each rep's portable equipped with all necessary information upon delivery. Metropolis Software Inc., an experienced Fourth Dimension developer, provided most of the technical leadership and programming for the custom application.

Production System Launch

The system went live in November 1991. Each sales rep received two full days of training and a notebook equipped with a broad suite of applications. Applications included territory management, calendaring, account information, pricing configuration, communications and a proposal generator. All data could be stored locally or in corporate data bases. Product descriptions and competitive comparisons were also scanned and downloaded to the portables.

Campbell estimates that about 95% of the sales force currently uses Apollo. Some use it casually, others heavily. The casual users tend to be older sales reps who have established their accounts and territory, as well as a refined style of account management. The more aggressive users tend to be the less experienced reps who are toiling to develop their territory.

Estimated Return on Investment

Storage Technology has done some preliminary analysis of how the system has affected its business. The cost of implementing the system, including development, software, hardware and training was about $1.5 million. Spread over the 200-person sales force, the cost per rep is about $7,500. Campbell estimates the system will pay for itself within eighteen months.

He also points out that, prior to implementing the SFA system, the average number of sales calls per sale was 50. As a result of the system, that number has dropped to 40. He adds that as the system is increasingly used, the number of calls will drop even further.

Glass House	Personal Productivity	Enterprise Integration
• Central Batch Processing or Host Systems • Character-based Interfaces • Routine Reporting • Central Databases 1970s	• Local Processing on Departmental Desktop Computers • Graphical Interfaces (Macintosh, etc.) • Interactive Analysis/Reporting • Personal Databases Mid-to-Late 1980s	• Client/Server Distributed Processing • Open Systems/Networked PCs • Paradigm-Based GUIs • Mobile Computing • Group Collaboration/Communication 1990s

CONCLUSIONS

The need for SFA varies by company. The answer may be as simple as hooking sales into a corporate electronic messagiog system, or as complicated as building a highly strategic sales system that integrates various departments across multi-national companies.

When making the decision whether or not to invest in sales automation, be aware of the many available alternatives. If your company has decided, or is even thinking about moving down the SFA path, consider the following "dos" and "don'ts":

• Don't underestimate the importance of ease of use. The weakest link in the system can be the one between the user and the computer.

• Begin with an effective sales strategy. Throwing technology at a dysfunctional process will only set your company back. Also, consider the sales process as it involves other departmental functions.

• Meet with a broad range of SFA software vendors. Many have gone through great pain to overcome potential SFA pitfalls. Their references will provide you with the opportuoity to compare notes on SFA strategies and expectations.

• Investigate new technologies. An effective SFA system does not oecessarily require bleeding edge technology. However, as when making any IT investment, beware of dead-end technologies — such as those that may lock you into a single-user approach — as well as the obsolete (transportable computers). Select products that receive healthy and regular investments by the manufacturer or provider.

• Leave room to grow. In addition to considering current and future needs in the sales organization, consider how the use of the system may change. Take into account central IS issues even if rolling out independent systems, thus allowing potential integration down the road. Avoid the trap of outgrowing your first SFA investment.

• Don't alienate potential users or supporters. Despite the potential benefits of SFA, some may perceive it as a prying Big Brother. Interview users extensively not only to find out what will excite them but also to make them feel like contributors, not victims, of the process.

• Don't encourage abandoning unique selling styles in favor of generic system prescriptions. Customizatioo should be considered at the sales organization and at the personal level. The system should complement rather than inhibit a rep's style of selling.

• Stay in touch. View the SFA implementation as an evolution, not a revolutioo. Let the users know you care. Check back with them after several months of usage.

• Invest in the system continually. Sales people will pay more attention to a system that receives regular attention than one that is establisbed and forgotten. Sending out regular notices regarding system enhancements and training classes can be a passive, yet effective, way to eocourage system usage. Furthermore, as the system is used, leave open the possibility of incorporating new needs or suggestions.

The SFA evolution is underway. Becoming SFA-aware is an inexpensive first step for companies tbat bave not fully extended computer automation to the sales function. This simply requires understanding the potential benefits of SFA and how the various alternatives might apply to your sales organization. If nothiog else, becoming SFA-aware will help to preveot competitors from taking your company by surprise.

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that delivers affordable laser [illegible] 00 dpi text a[illegible]
graphics, in less desk space than a [illegible] paper.

The Kodak Diconix 701 printer deliv[illegible] quality that makes your communications, and you, look good. Yet it needs only 7.4 x 11.7" of desk space, even with the ingenious 30-page built-in paper feeder. It's a compact ink-jet printer, in the award-winning Diconix tradition, quiet, easy-to-use, sleekly [illegible]ome. And it prints up to three pages per minute. [illegible] than 6 lbs., including the optional b[illegible] is the definitive mobile printer. Use it a[illegible] at home, or anywhere in betw[illegible] you work, don't wait: call for the n[illegible]ler near you in the U.S. and Can[illegible], Ext. 413.

LASER QUALITY COMPACT DES[illegible]

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Ryder trucks in automation

By Rosemary Cafasso

After a nearly five-year effort, Ryder System, Inc. now has its eye on the finish line for a project that places PCs in the offices of thousands of independent consumer truck dealers and links them to the Miami-based firm.

Dubbed Ryder First, the project, which cost more than $20 million, is considered critical to the company's "long-term business success," said Dennis Klinger, vice president of information systems and chief information officer.

Dennis Klinger: *Ryder is investing in a segment under pressure*

It is intended to boost Ryder's only consumer business, which has been under pressure from a sagging economy and fierce competition. Ryder currently holds the No. 2 slot under market leader U-Haul Co., said Douglas Rockel, a first vice president at Merrill Lynch & Co. in New York.

Last year, Ryder lost money in this segment, confirmed Gerald Riordan, senior vice president and general manager of the consumer truck rental business, although he declined to provide specifics.

While the consumer rental group is less than 25% of Ryder's overall business, it is nonetheless a core unit and will remain a significant part of Ryder's operations, Riordan said. The company's other businesses range from commercial truck leasing and rentals to jet engine repair. Together, the units brought in more than $5 billion in revenue to Ryder in fiscal year 1992.

"Ryder First is a high priority—an investment in a segment that's been under pressure," Klinger said. "It is one of these systems that is key to the business."

With Ryder First, order entry, sales, marketing and, perhaps most importantly, inventory management, are automated. By linking local-dealer systems with regional hosts and a mainframe at headquarters, Ryder gets more immediate data on where its 30,000 trucks are. Ryder can also change rental rates from headquarters or on a regional basis and have the changes automatically reflected at the dealerships.

Ryder First replaces a system that relied on pencil, paper, telephones and the U.S. mail, which often meant critical data on truck availability was conveyed to Ryder well after it would have been useful. At the same time, Ryder could not automatically notify dealers of rate changes.

The company plans to have all of Ryder's 4,500 independent dealers on-line by March 1993. About half of this group is now linked to the Ryder First system, which is based on IBM Personal System/2s with customized software and dial-up modems that reach the company's regional IBM Application System/400s. At corporate headquarters, IBM 3090s are fed regional data.

Ryder began installing the systems at dealer locations a year ago. Through most of 1992, it brought one district per month on-line. In September, it upped that to two districts per month.

Dealers currently using the system are showing revenue-per-unit gains as well as slight decreases in transfer expenses, Riordan said. He said the dealers are well on their way to boosting the revenue-per-unit numbers by up to 20% and cutting transfer expenses by as much as 15%, which are the goals of the Ryder First project.

Company officials seem to identify with Ryder First, not only because it is so critical to the firm's business goals but because this project has been under way for so long.

The plan for the system was conceived in the late 1980s. The company evaluated existing systems, including credit-card processing software, to see what could be tailored to Ryder's business because "we didn't want to reinvent the wheel," said Andy Anderson, director of operations and support for the consumer truck rental group.

In 1988, Ryder launched a prototype that involved about 500 dealers; it ran for a year. Klinger said the prototype taught Ryder plenty.

"We found that we needed to give more capabilities to the dealers to entice them to want to do this," Klinger said. "We also found that we needed to have tighter controls to keep the quality of the data."

Ryder then worked closely with the dealers to determine exactly what their needs were by involving them in prototyping sessions.

The end result is a Microsoft Corp. DOS 5.0-based system with graphical features, menus and prompts to help dealers complete an order. Microbilt, Inc. in Atlanta wrote the desktop software for Ryder and designed it to work with the firm's in-house-designed inventory management software running on the larger IBM equipment. The dealer's desktop software also includes sales suggestions so dealers can better market the Ryder product.

Klinger said a key factor to Ryder First was winning the dealers' approval. As independent businesses, the dealers are not on the Ryder payroll and could not be instructed to adopt the system. Instead, Ryder needed to prove that the system would improve business and not severely disrupt dealer operations.

"We gave them value to help us," Klinger said. "To the extent they are successful, we are successful."

ON SITE

Ryder System, Inc.
Miami, Fla.

Challenge: To boost efficiency of its consumer rental business — much of which was managed with paper, pencil and telephones in the field.

Technology: Extend use of existing base of IBM 3090s and AS/400s; add 4,500 IBM PS/2s and customized software to manage dealer operations and link them to headquarters.

Results: Dealers on-line show revenue-per-unit boosts and small decline in truck transfer expenses. Moving toward goal of revenue boosts of up to 20% and drop in transfer expenses of 15%.

Beware: Viruses take no holiday break

By James Daly

'Tis the season to be jolly, that is true, but if you are a virus writer, that might mean destroying data on the files of some unsuspecting PC user. So while the rest of the world is wishing for good will, do not let your guard down: In addition to the fall's usual rogues' gallery of malicious codes [CW, Aug. 31], December features several seasonal—albeit rare—virus variants.

These newcomers are, theoretically, nondestructive. But since virus writers are not particularly known for crackerjack code, any or all may cause a loss of data, according to officials at Fifth Generation Systems, Inc., a Baton Rouge, La., developer of data security software.

As with all viruses, these dates of occurrence are made for general awareness and are not exclusive. Many a skilled programmer can change a few lines of a code and make the virus go off whenever they desire. We have said it before and we will say it again: Scan any new disk before it is used and back up, back up, back up.

You better watch out

Christmas week is the time for December-specific viruses, which include the Father Christmas virus, due to strike between Dec. 19 and Dec. 31; the 1253 virus on Dec. 24; and Poem on Dec. 21.

The Father Christmas virus, which activates from Dec. 19 to Dec. 31, is a nonresident infector of .COM files. When infected files are executed, a Christmas tree graphic is displayed on the monitor bearing the following message: "Merry Christmas & a Happy New Year for all my lovely friends from Father Christmas."

The user must then strike a key to allow the executed programs to finish running. Users with infected systems may also notice cross-linking of files and lost clusters that result in a loss of data.

Another December virus, 1253, is a generic infector of .COM files, including COMMAND.COM. It is set to activate on Dec. 24. Along with .COM files, it infects the boot sector of floppy disks and the partition table of hard disks.

On activation, any disks accessed while 1253 is present in memory will have their boot sector infected. Newly formatted disks will also be infected immediately.

The 1253 virus can also have different effects, depending on its method of activation. If an infected program on a disk is executed on the virus activation date, the virus will overwrite the entire disk with a pattern of nine sectors of what appears to be a program fragment. If the system is booted from the infected hard drive or floppy on Dec. 24, there will be unexpected disk activity to inactive drives.

Once the 1253 virus has started to overwrite a disk, a user may stop the disk activity by turning off the system power. Eliminating the 1253 virus requires disinfection of the hard disk's partition table and the boot sector of any disks exposed to the infected systems, as well as the infected .COM programs. Otherwise, the virus will promptly reinfect the system upon reboot.

Dec. 21 is the activation date for Poem, a memory-resident infector of .COM programs, including COMMAND.COM. Poem resides in memory and keeps track of how many times interrupt 21 has been called. When interrupt 21 has been called 2,112 times, the virus will display a poem called "Void," and the user will be prompted to press escape to continue.

If an infected file is executed on Dec. 21, the virus will display the same "Void" poem. It will then overwrite the first 1,221 sectors of the system hard disk, drive C, with an unencrypted copy of the virus' code.

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Borland, Microsoft duel

By Jean S. Bozman
SCOTTS VALLEY, CALIF

Borland International, Inc.'s rivalry with Microsoft Corp. has turned into a tug-of-war on database standards for the desktop. Both sell PC databases, and both are hawking different client/server application programming interface (API) standards.

Borland's proposed Integrated Database Application Programming Interface (IDAPI) [CW, Nov. 16] is intended to counter Microsoft's Open Database Connectivity (ODBC) API for client/server Windows applications.

Borland claims that Microsoft's ODBC, which more than 40 vendors support, is just for Microsoft Windows client machines and does not let users take full advantage of nonrelational PC databases such as Borland's dBase.

Microsoft counters by saying it will move ODBC beyond the Windows desktop in 1993, adding extensions for the Apple Computer, Inc. Macintosh and, eventually, Unix.

IDAPI handles client queries according to the type of target database required by the application. That way, the speed of querying data stored in flat-file databases using the Indexed Sequential Access Method can be preserved. Both APIs use SQL, the industry-standard database query language, to find records in relational databases.

Borland's IDAPI, a variation of Borland's former ODAPI standard to connect Borland databases, was announced with support from IBM, Novell, Inc. and WordPerfect Corp. At Comdex/Fall '92 last month in Las Vegas, more vendors signed up for IDAPI.

Political goal

But industry analysts said Borland's goal with IDAPI is as political as it is technical. Borland wants to keep rival Microsoft from writing the rule book, said Charles Phillips, a research vice president at Sound-View Financial/Gartner Group, Inc. in Stamford, Conn.

Users and developers said the standards war is confusing — and they are worried that it will cost them extra money to support both APIs.

"It's getting to the point where you need a database to keep track of the acronyms," said Alan Zenreich, president of Zenreich Systems, a database consulting firm in Oradell, N.J. "ODBC and IDAPI make developers and users even more confused than they were before. And yet it seems that they are quite similar and fundamentally do the same thing."

For network browsing and ad hoc queries, both ODBC and IDAPI will get desktop clients the data they need at a much lower cost than database-specific client/server links, users said.

"It's the beginning of a plug-and-play software environment," said Michael Corey, president of the International Oracle Users Group.

Interoperability will be important to most end users.

"All the clients should all be able to talk to all the servers," said Michael Fitzmaurice, MIS director of the National Association of Broadcasters in Washington, D.C., who has both Borland's Paradox and Microsoft's SQL Server for OS/2. "It's to our advantage to have something resembling a standard. I'm really tired of living in a tower of data-babble."

Datapro rates TMON for CICS tops in user satisfaction

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Stacker 3 offers more compression muscle

By Christopher Lindquist
CARLSBAD, CALIF.

Data compression to save disk space works. But several factors have hampered its widespread acceptance: Compression products were slow, hard to use or unreliable. Stac Electronics recently tried to eliminate all three hurdles with Version 3.0 of its Stacker data compression product.

The company has been in the compression business since 1988, and Stacker has been on the market since 1990. But the latest version of the product seeks to combine power with ease of use under both Microsoft Corp.'s Windows and DOS. According to users, it succeeds.

While important, ease of use and a pretty interface take a backseat to reliability when a product touches every piece of data on a system. Not to worry, users said.

"It's dead stable," said Charlie Russel, computer integrated manufacturing systems administrator at New United Motors Manufacturing, Inc., noting that when he has run into problems in the past, Stac's technical support was very good.

Stability may get the vote of information systems managers, but it takes more than that to attract users. Stac reportedly has addressed that area by making the product as transparent and simple as possible.

"It's much easier for the user to use," Russel said. He added that the product not only looks better, but it has higher performance as well. "There's a noticeable improvement in both speed and compression," he said.

"It has very, very good performance," agreed Greg Feeler, IS manager at Employer's Resource Corp. Feeler said he found the performance of the Version 3.0 software to be even better than that of Version 2.0, with a coprocessor card on some high-end machines.

Ease-of-use enhancements include an improved installation program that can be used under Windows or DOS, the ability to dynamically change the size of "stacked" drives or to "unstack" them altogether and a Windows-based "Stackometer" that provides information on compression ratio, available disk space and disk fragmentation levels.

Users can also protect stacked drives with passwords and use Stacker Anywhere to move data between machines that may not have Stacker installed.

Stacker Version 3.0 is available now for a list price of $149.

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Peripherals

Inforite Corp. has introduced the Inforite MP Series of Writing Pads.

Both DOS and Microsoft Corp.'s Windows-based versions are available. Data or signatures can be captured by using a nonelectronic stylus or ballpoint pen and paper. The MP100 was tailored for general office use and the MP200 was designed for the point-of-sale environment, the company said. Each weighs approximately 16 ounces.

The MP100 and the MP200 each cost $295.

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Microsoft's Windows for Workgroups

Smooth to use, but it has its limits

Reviews	E-mail/ Applications	Utilities	Ease of use	Performance	Resource/Hardware requirements	Software compatibility	File sharing	Security	Overall value
PC Week 10/12/92	Not powerful enough	NC	One-stop packaging	Strong	NC	A number of problems	NC	NC	Uses advanced technology
PC Magazine 12/8/92	Full strength	Useful	Striking	Fast	Recommends 8M bytes RAM	Works with large number of networks	NC	Less comprehensive	Superbly put together
Windows Magazine 12/92	Nice looking	NC	Eases networking considerably	Quite snappy	NC	No software compatibility problems	Shares directories simply	Relatively low	Well-designed
Users									
Kirby Thornton, Logistics Systems Engineering, Inc.	■	▙	▙	▙	■	▙	■	▙	Very useful product
Steven Stern, JMB Realty Co.	■	▙	▙	▙	▙	■	▙	▌	Excellent
Rick Smith, Synergy Computing	■	▙	■	▙	▌	▙	▙	▌	Pretty good deal
Analysts									
Krystyna Filistowicz, Dataquest, Inc.	▙	▙	▙	▌	▙	▌	▌	▌	Part of an evolving strategy
John Donovan, WorkGroup Technologies, Inc.	■	▙	■	■	▙	■	■	▙	Incredible
Earl Rich, Faulkner Information Services	■	▙	■	▙	▙	▙	▙	▙	Excellent E-mail facilities

Key: ■ Very good ▙ Good ▌ Fair ▪ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Reviewers found Microsoft Corp.'s Windows for Workgroops painless, easy and smooth to install and use, hut they also said the package has limitations when it comes to large networks. Reviewers also reported glitches in Windows for Workgroups' compatibility with several Windows applicatioos.

The offering gives networked users peer-to-peer file and peripheral sharing, Windows utilities including File Manager and Print Manager, Dynamic Data Exchange (DDE), Object Linking and Embedding (OLE), a hundled mail package and a group scheduler program.

ELECTRONIC MAIL/APPLICATIONS

Microsoft Mail, a calendar and a group scheduling applicatioo called Schedule+ are hundled with Windows for Workgroups. Mail is an E-mail package that can also serve as an engine for building workgroup applications. Reviewers reported that this versioo is a hit diluted. However, OLE support is provided.

UTILITIES

Two utilities are included for monitoring local-area network activities and resources. WinMeter graphically displays how much processor use the server is snatching from applications, and NetWatcher exposes user names and directories conoected to local PCs. *PC Week* said these utilities do not have the muscle oeeded to support networks with more than a few dozen nsers.

EASE OF USE

According to reviewers, one of Windows for Workgroups' greatest assets is its easy, completely automated installation.

RESOURCE/REQUIREMENTS

PC Magazine advised that a Windows for Workgroups server setup should consist minimally of a 386DX/33 with 8M bytes of random-access memory and at least a 200M-byte hard disk.

SOFTWARE COMPATIBILITY

Attempts to make a Network DDE link with Borland international, Inc.'s Quattro Pro for Windows resulted in repeated crashes in the Windows environment. Additional problems were cited with WordPerfect Corp.'s WordPerfect for Windows and Lotus Development Corp.'s Ami Pro 3.0 and 1-2-3 for Windows (see vendor response). Applying Windows for Workgroups on a Novell, Inc. NetWare network is complicated, reviewers said.

SECURITY

Reviewers claimed that Windows for Workgroups' security is less comprehensive than that of Windows NT. Passwords are assigned for either read/write/create access or just read-only access.

OVERALL VALUE

While Windows for Workgroups may not be appropriate for larger firms because of its inability to transmit across gateways, smaller offices should benefit from its features. Windows for Workgroups costs $300. A two-user Starter Kit lists for $850.

Summary by Lisa Davidson.

Vendor background data

MICROSOFT REPORTED RECORD REVENUE OF $818 MILLION FOR THE QUARTER ENDED SEPT. 30, A 41% INCREASE OVER THE $581 MILLION REPORTED LAST YEAR. "I ENVISION WINDOWS FOR WORKGROUPS EVENTUALLY SUPPLANTING ORDINARY WINDOWS APPLICATIONS IN THE NEXT TWO TO FOUR YEARS," SAID CHARLES TAYLOR, A NEEDHAM & CO. ANALYST.

Russell Shapiro, product manager for Windows for Workgroups:

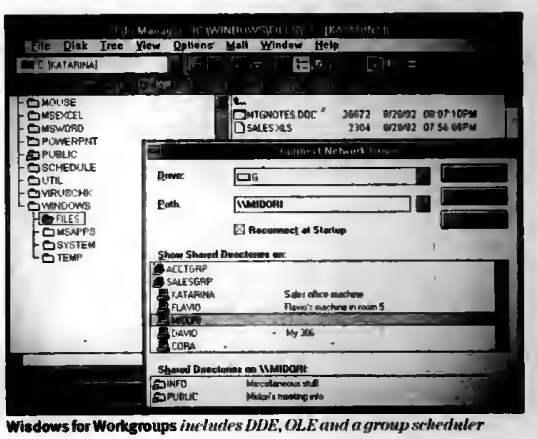
Software compatibility: Some problems and early versions of Windows for Workgroups contained problems when using Network DDE with certain applications. Some of these problems occur because applications do not properly support DDE or OLE. A few of these were because of problems in Windows for Workgroups. These problems are now fixed.

Running Windows for Workgroups in connection with Novell's NetWARE requires some hand configuration because of conflicts between Microsoft's and Novell's NetWARE implementations. The necessary steps are documented in the Windows for Workgroups Resource Kit.

Windows for Workgroups supports any Network Device Interface Specification-compatible protocol with NetWARE as its primary protocol.

E-mail and applications: Windows for Workgroups ships with a complete mail solution, including Post Office, for a single workgroup. For additional management features, access to gateways, remote access, etc., Microsoft ships the Mail and Schedule+ Extensions. The Mail and Schedule capabilities are full and capable systems with no limitations as long as a single Post Office is used. For larger installations, multiple Post Office applications may be beneficial.

Security: Windows for Workgroups security provides for read-only and full-access permissions on shared printers, directories and Network DDE items. Windows NT does not offer advanced security features.



Windows for Workgroups *includes DDE, OLE and a group scheduler*

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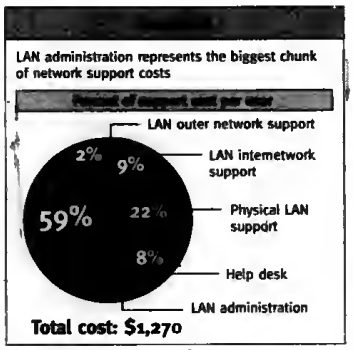
At triple the price of SNA, are large LANs worth it?

By Michele Dostert

Hidden administration costs can make supporting large local-area networks two to three times as expensive as supporting the same number of users on a traditional Systems Network Architecture (SNA) network, according to a report from Forrester Research, Inc., a research firm in Cambridge, Mass.



Source: Forrester Research, Inc.

The report, authored by analyst Janet Hyland, said that the typical yearly cost of user support on a 5,000-user internetworked LAN is $6.4 million, compared with $2.3 million on an SNA network. Of the "$1,270 per-user support cost for new corporate networks, routine tasks such as restarting hung printer queues, rebooting frozen users and rearranging disk space account for $750," the report said.

"Users are suffering from the costly legacy of departmental LANs. Novell, Inc.'s NetWare [which is installed in at least 60% of the current LAN market] contributes heavily to the administrative burden since it was originally conceived with all administration focused on a single server," Hyland said.

Novell's forthcoming Version 4.0 of NetWare, with new Global Directory services, will help make LANs more centrally manageable, according to the report.

Hyland also blamed LAN administration costs on information systems oversight. She said companies have a battalion of poorly trained local LAN administrators with ill-defined procedures for problem escalation. These local administrators often do not do their jobs cost-effectively.

Large LANs, *page 66*

LAN Lab shows the art of interconnection

By Michele Dostert

In the good old days — say, three years ago — setting up a local-area network meant connecting one basic technology: the Intel Corp.-based PC. Today, LAN managers are being asked to connect not just apples and oranges but grapes, pomegranates and the odd kumquat here and there.

One of the hottest attractions at the recent Comdex/Fall '92 networking pavilion was the LAN Lab, where users saw a whole fruit basket of different platforms and products connected on a single LAN and got valuable tips on how to do it themselves.

The LAN Lab was installed and managed by members of the Local Area Network Dealers Association (LANDA). The booth was staffed by the technicians who had done the setup — and who often found themselves giving impromptu seminars on LAN design and the art of the heterogeneous LAN to eager listeners.

Ryk Edelstein, an engineer at LANequip in Montreal and a LAN Lab engineer, said, "A lot of people came in with problems that we've handled a hundred times; they're basic to us, but they give the users fits. We helped them with everything from cabling problems to LAN/Unix connectivity to high-end LAN/mainframe integrations. We not only told them how to do it, we often showed them right there in the lab."

According to Scot Steele, a network consultant at Universal Networks in Elmhurst, Ill., and the LAN Lab's primary designer, many LAN Lab visitors were just starting to build LANs and were looking for design fundamentals.

"I told them to build it in three steps: First, get everyone running the desktop they will use — DOS, Windows, Macintoshes, whatever. Next, get everyone attached to the LAN. Thirdly, figure out the services you need to provide — applications, E-mail, modem service, fax service, mainframe connectivity, etc. — and put all those services on a central location so you don't end up with local peripherals all over the place that are not being used."

Steele said his three-step procedure, refined over hundreds of LAN installations, can save thousands of dollars and man-hours.

Although LAN Lab did a landmark business in free network consulting, its primary function was as a showcase heterogeneous LAN where users could see 22 vendors' products working together. The

Interconnections, *page 66*

$76 326 923 288

By the end of this week Computerworld readers will have spent over $76.3 Billion on Information Technology this year – representing nearly half of all IT spending to date in 1992.

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In Brief

PeopleSoft/Sun deal

Applications vendor PeopleSoft recently announced support for Sun Microsystems, Inc.'s Solaris 2.1 platform. PeopleSoft, which sells client/server-based human resource and financial applications software, also said it has signed a joint marketing and development agreement with Sun. Walnut Creek, Calif.-based PeopleSoft plans to port its PS/HRMS human resource management package to Solaris 2.1 by the first quarter of 1993.

X use grows at Sun sites

A survey of 400 network computing sites recently conducted by The X Business Group in Fremont, Calif., revealed that use of the Open Software Foundation's (OSF) Motif graphical user interface has increased by more than 100% in the Sun customer base during the past year. This is despite the fact that Sun's own OpenLook interface is bundled with Sun operating system sales, according to The X Business Group.

Proactive support

Proactive Software, Inc. in Mountain View, Calif., recently announced that its Customer Information Respurce system will support servers running the Informix Software, Inc. Informix-Online relational database management system. Proactive also added support for PC and workstation clients running X Window System and the OSF's Motif.

The art of interconnection

CONTINUED FROM PAGE 65

LAN Lab consisted of five segments, two running over Ethernet from Standard Microsystems Corp. and the other three running over Token Ring provided by Racal-Datacom, Inc. and IBM.

The LAN used Novell, Inc.'s NetWare running on servers from Net Frame, Inc. and Epson America, Inc. as its core operating system. Attached to the NetWare LAN and sharing files and printers with it were an IBM RISC System/6000 running AIX, two Next machines from Next, Inc. running the NextStep operating system and an Intel-based server running The Santa Cruz Operation's Unix. NetWare/Unix connectivity was provided by Novell's LAN Workplace for DOS and Quarterdeck Office Systems' Desqview/X products.

Users also saw backup software and hardware from seven vendors, new laptop-to-LAN connectivity products from Xircom, Inc. and a 386-based Ethernet LAN workstation from LANCO, Inc. that includes preloaded software drivers for 12 different networking environments.

"I'd say the biggest stars of the LAN Lab, the ones which generated the most excitement, were Intel's Storage Express backup system, the Next workstations running Desqview/X and the RS/6000 connectivity," Steele said.

The LAN Lab was such a success that another lab is being planned for the Comdex/Spring '93 show in Atlanta. "Comdex has asked us to do it, and we're already talking to a lot of vendors who want to add their products to the LAN Lab," said Vern Tepe, president of Universal Networks and LANDA's treasurer.

"I think demonstrating networks like LANDA's provides a real service in educating Comdex users," said Stan Schatt, a LAN analyst at Computer Intelligence/Infocorp in Santa Clara, Calif. "Most of the real network experts go to Interop and Networld, where internetworking demonstrations are a dime a dozen. But Comdex attracts PC experts and people who are just starting to connect all their stuff together; for them, the LAN Lab functioned as a networking tutorial."

Large LANs

CONTINUED FROM PAGE 65

How can IS stop pouring money down the LAN support pit? Hyland recommended a two-pronged approach. First, the report said that large LANs should move to high-capacity superservers. It takes fewer people to support one server with 150 users than to support 10 servers with 15 users each.

Secondly, IS must tackle the people front. Hyland said, "The root of high costs is in the high number of individually run departments. Having fewer servers allows companies to cut back on LAN administrators."

Hyland recommended that the remaining administrators be combined with the best of the current help-desk personnel to form a new "network savvy" help desk.

Surprisingly, the report did not recommend outsourcing as a support-cost solution. Hyland said the lack of good remote tools and cross-server administration capabilities means that third parties cannot deliver support any cheaper than in-house staff. But Forrester expects that upcoming products will make outsourcing more cost-effective.

How can you produce while curbing

For Cadillac and EDS, the answer is teamwork. The 1993 Cadillacs arriving now in showrooms continue the same tradition of excellence as the award-winning 1992 models. The 1992 Cadillac Seville STS was the **first car ever to receive all three major automotive press awards** in the same year, including Motor Trend's coveted Car of the Year. Yet thanks, in part, to information technology from EDS, production cost efficiencies are improving.

EDS helped Cadillac improve production efficiency by combining more than 80 different systems into one comprehensive scheduling system. In another major project, EDS provided

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Modems

QuickComm, Inc. has introduced Spirit II modems.

According to the company, the modems operate at the newest speed standard of V.32 bis, which is equivalent to 14.4K bit/sec. A Group 3 fax modem as well as communication and fax software are included.

Operating at speeds of 1,200 bit/sec. to 14.4K bit/sec., the Spirit II asynchrooous modem supports CCITT V.42 and Microcom Networking Protocol 2-5 error correcting protocols.

The Spirit II also supports V.22 and Bell 212A modulation data rates. The internal Spirit II occupies a one-half card PC expansion slot.

The external Spirit II costs $249, and the internal model costs $229

➤*QuickComm*
Suite K
2290 Ringwood Ave.
San Jose, Calif. 95131
(408) 956-9145

Workgroup software applications

Mai Systems Corp. has introduced ManBase Release 7.0.

The Unix-based Enterprise Resource Planning system was designed for process manufacturers. It features a client/server architecture, fourth-generation language tool sets and a relational database.

According to the company, ManBase can function as a business planning and control system and includes sales-order management, full financials and inventory and production management.

The product was written to use Sybase from Sybase, Inc. and support platforms from Sun Microsystems, Inc., IBM's RISC System/6000, Hewlett-Packard Co.'s HP 9000 and The Santa Cruz Operation's Unix.

Prices range from $50,000 to $350,000.

➤*MAI Systems*
Suite 150
39555 Orchard Hill Place
Novi, Mich. 48375
(313) 347-9070

Workstations

Dataram Corp. has announced expansion memory products designed for Digital Equipment Corp.'s Alpha-based workstations.

Available in 32M-byte and 64M-byte capacities, the DR15 memory is fully compatible with the 64-bit Alpha architecture, the company reported. The memory comes as a set of eight 4M-byte or 8M-byte modules that plug into the carrier cards of the Alpha-based systems.

The DR15/32 costs $5,600, and the DR15/64 costs $10,000.

➤*Dataram*
Route 571
Princeton Heightstown Road
Cranberry, N.J. 08512
(609) 799-0071

Data General Corp. has introduced three workstations based on Intel Corp. 1486 microprocessors.

The workstations are IBM PC/AT-compatible and can be configured into applications such as desktop publishing, database management, networking, Microsoft Corp. Windows and graphics.

The Dasher II-486SX/25A is for any processor-intensive application that does not require a math processor.

Dasher II-486/33A and Dasher II-486DX2/50A each offer a built-in math coprocessor, and they are better suited for computer-aided design and manufacturing as well as other math-intensive applications.

All three provide 4M-byte system memory, which is expandable to 16M bytes; 8K-byte on-board cache memory, and a built-in Small Computer Systems Interface controller capable of supporting up to seven devices.

Base configurations for the three workstations include a 3½-in., 1.44M-byte diskette drive, Small Computer Systems Interface controllers, two serial ports, one parallel port and Ultra Video Graphics Array capabilities.

Prices begin at $2,095.

➤*Data General*
4400 Computer Drive
Westboro, Mass. 01580
(508) 366-8911

Unix

Waterloo Maple Software and Mathsoft, Inc. have jointly announced a new version of Maple V for the Unix platforms from Sun Microsystems, Inc. and Digital Equipment Corp.

According to the companies, Maple V is a comprehensive mathematical software package for performing numeric and symbolic calculations. Maple V Release 2.0 has enhanced two- and three-dimensional graphics, an improved user interface and typeset-quality output.

The product includes more than 700 new math functions, advanced graphics, an Open Software Foundation Motif-compliant interface, a new graphical user interface for Microsoft Corp. Windows and enhancements to the Maple programming language.

Maple V Release 2.0 costs $795.

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Toll fraud biting into businesses

By James Daly

While most information systems security professionals spend their day protecting their data from destruction or theft, there is a subtler form of fraud that is quietly picking corporate America's pockets: the theft of telephone services.

In the past few years, toll fraud has grown so fast that U.S. businesses are expected to pay more than $4 billion in unauthorized calls this year, according to Telecommunications Advisors, Inc., a Portland, Ore.-based consultancy.

Here is another cruel twist: Now that many users own the equipment penetrated by the thieves, long-distance carriers assert that liability for such losses rests with the user or owner. In other words, if unauthorized calls are discovered on your phone bill — be they for $100 or $100,000 — you will be the one who ultimately pays. Not AT&T. Not Sprint. Not MCI.

It is not just teens looking for kicks who illegally access telephone services. A thriving call/sell operation attracts drug dealers, illegal aliens and organized crime figures, all of whom are lining up for free calls that are difficult to trace.

Skilled hackers loop in and out of private branch exchanges (PBX) to reoriginate the calls and prevent line tracing by law enforcement. Crimes are often committed over 800 service lines, so the companies also pay the criminal's operating expenses. Using someone else's PBX is a great way to avoid detection and save money.

As a result, law-enforcement officials say, toll fraud is is only going to get worse. "It's not a matter of if people will be hit, but when," said Don Delaney, a senior investigator at the New York State Police. Delaney said he has received 150 complaints of toll fraud in the past year, with losses ranging from $40,000 to $500,000. Once in, system crackers resell their means of entry to others, who fill the telephone lines with illicit traffic. It has become so prevalent that toll fraud insurance of up to $1 million is now provided by The Travelers Corp. insurance company.

Tips for curtailing telephone fraud

- Make sure you are using all of the security features of your PBX.
- Monitor toll-calling areas.
- Limit calling permissions.
- Shorten the amount of time the direct inward switch port on the PBX is available.
- Consider some of the telecommunications monitoring packages on the market.
- Contact your vendors if you suspect unauthorized use.

The initial problem is that the PBX that handles most phone service is up against tough problems. Frequently, unscrupulous callers take advantage of Direct Inward Switched Access (DISA), which was designed as a less expensive alternative to issuing employees surcharge-laden calling cards. DISA allows employees to call an 800 number into their company's PBX and then access a dial tone to make outgoing calls.

Other areas of telecom security concern are the remote maintenance port (a digital port that permits vendors to access a customer's equipment for diagnostics), the Automated Attendant (an adjunct system that attaches to the PBX to direct calls to predetermined extensions) and voice mail, which is connected to the PBX but often sports few security features.

Warning signs to look for

Users said the key to fighting phone fraud is recognizing abnormal calling patterns quickly. Earlier this year, Sherry Roggeman, communications coordinator at the Empire Southwest Co., a heavy equipment dealer in Phoenix, noticed an unusual amount of telecom activity with Puerto Rico, a place where Empire Southwest does not normally do much business. To Roggeman's dismay, she discovered that someone had gained unauthorized access to the company's PBX through its 800 number and was charging long-distance calls to the company. By the time she clamped down and tightened access, Empire had been hit with $15,000 in unauthorized calls. "It's frightening," she said. "Telecom fraud is a big business, and it's scary to think that someone is spending all this time trying to crack my systems."

But there are solutions short of unplugging everything and shutting down all the PBX features. There are many products already on the market to ease some of the hacker-generated anxiety.

Atlanta-based Complementary Solutions, Inc., for instance, markets a product called Telemate FraudFighter that learns normal telecommunications activity levels and then monitors specific trunk groups, extensions, calling regions and DISA codes for deviant patterns. Similarly, Xiox Corp. in Burlingame, Calif., offers a family of fraud prevention products that use such artificial intelligence features as voice identification.

Toll fraud support services can also be gleaned from Sprint Corp., which offers Sprintguard. Some of its features include customer notification of abnormal calling patterns. AT&T offers a similar program, called Netprotect, to relieve customers of liability for international long-distance fraud.

Experts advise, however, that users should not rely on others to prevent fraud. "Right now users are doing very little to protect themselves," said John Haugh, chairman of Telecommunications Advisors. "AT&T handles about 115 million calls a day. AT&T can't look out for you."

Elisabeth Horwitt

The good ol' days

A few years back, interop was sort of a neutral zone where a bunch of networking techies — vendors and users both — could get together and hammer out crucial issues such as how to ensure their various products really worked together using TCP/IP.

Not anymore.

At the Interop '92 show in October, vendors still claimed to be working together to promote standards-based interoperability. There were still demos to show that a standard such as FDDI or SNMP really worked across multivendor platforms. But the relaxed camaraderie that used to exist in birds-of-a-feather sessions at the old Interop shows was conspicuously lacking.

Vendors were trumpeting how their standards support is so much more genuine and user-oriented than their competitors'.

Meanwhile, various factions were trying to get users and other vendors to support their particular mix or brand of standards.

IBM and Cisco bickered about the best way to route SNA across internetworks.

Horwitt, *page 73*

Telecom users bullish on wireless

By Ellis Booker

Business users are exceedingly bullish on the prospects of wireless data networking, even if they do not see it replacing wireline communications, according to a recent worldwide survey of some 3,500 telecommunications directors and information systems executives.

The study, conducted by Deloitte & Touche Telecommunications & Electronic Services Industry Program, found that business users prefer wireless in most situations — provided features and prices are similar to those offered by wireline technology.

In addition, 40% of the respondents said the distinction between wireline and wireless communications will disappear by the middle of the decade. Also, 50% of those surveyed said they did not expect to pay a premium for wireless services by then. The remaining 50% expected to pay only a 10% premium over the cost of wireline services.

Wireless will supplement, not replace, wireline services

Interestingly, 96% said wireless will "supplement," not replace, wireline services.

One outcome is that providers of traditional wireline networks — especially local exchange carriers (LEC) — will come under competitive pressure from providers of wireless services. Non-LEC firms have been the major recipients of Federal Communications Commission licenses for Personal Communications Systems trials.

LECs will be able to offset some of these lost revenues through higher access fees charged to wireless providers. "However, they will not be able to recover all the lost revenue," said Joseph S. Kraemer, industry national director of telecommunications and electronic services at Deloitte & Touche.

Even so, Kraemer said, wireless technology may not become a ubiquitous networking option, and thus achieve its full potential, unless the currently fractured wireless industry can provide a common billing and interconnection scheme.

To achieve their full potential, Deloitte & Touche said, wireless services will have to be priced to be attractive to a mass market.

The company's survey results support this view: 72% said the price of a wireless service would be the most significant barrier to its growth.

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Vendors push X.400 for dial-up lines

By Lynda Radosevich

An international group of vendors led by start-up messaging developer Isocor has joined forces to push for multimedia communications based on the X.400 messaging standard over ordinary telephone lines. Currently, X.400 requires a leased-line X.25 connection.

The technology would make it possible for companies to run fax, voice and data traffic over voice lines using circuit-switched technology instead of having different networks for the various technologies, said David Knight, Isocor's vice president of marketing. It could also save companies fees associated with leasing lines.

The vendors hope to attract firms with remote users who could use X.400-compliant applications to dial into their local-area networks, as well as firms that regularly send fax and electronic messages abroad but do not have dedicated lines.

"Dial-up has typically been left on the table, but it's getting attention lately because of dedicated line costs," said Charlie Robbins, director of communications research at the Aberdeen Group in Boston.

Other experts pointed out that while the X.400-over-phone-lines solution is appealing, it has limits. For instance, X.400 is typically a high-end messaging protocol used in wide-area networks, and its related X.500 directory structure makes it more difficult to scale down to LANs, said Wayne Kernochan, director of commercial systems research at the Aberdeen Group.

Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C., said X.400 does not provide for synchronizing voice and video and that video quality over phone lines is poor.

"You can't give me 30 [video] frames per second over telephone lines. Nobody can," Dzubeck said.

Vendors working together to promote the standard — called Asynchronous Protocol Specification (APS) — include BT, AT&T, Digital Equipment Corp., Hewlett-Packard Co., Norwegian Telecom and France Telecom. The vendors hope to deliver a final draft of the APS to the Consultative Committee for International Telephony and Telegraphy by spring 1993.

Other news

In a related development, Isocor recently announced a $3,450 fax system that works within X.400 electronic-mail environments, including Isocor's Isoplex X.400 electronic messaging servers. The system, which is currently shipping, allows users to integrate fax and E-mail capabilities to automatically route incoming faxes to users across a large corporate network, according to the company. It includes a single-line board for the IBM PC bus from GammaLink in Sunnyvale, Calif.

In addition, Isocor made the following X.400-related joint announcements:

- With the MaXware division of Norwegian Telecom to allow remote users with MaXware client products to dial into Isoplex servers.
- With Eicon Technology Corp. in San Francisco to offer the company's X.25 cards as an option with the Isoplex server.

Horwitt

CONTINUED FROM PAGE 71

Sprint, AT&T and MCI argued about whether supporting SMDS is important or a waste of time and money.

At the nearby Electronic Mail Association conference, Lotus' Jim Manzi magnanimously agreed to support the Microsoft Mail API — while taking potshots at his rival's E-mail-enabled products.

What has happened to Interop?

First off, it stopped being a venue primarily for TCP/IP geeks — vendor engineers and savvy users from the engineering, scientific and government sectors. Those folks knew what they wanted and had little tolerance for marketing hype. They still meet at Internet Engineering Task Force meetings and typically get a lot done in terms of improving TCP/IP and SNMP protocols.

Interop is now a commercial enterprise, just like Comnet or Networld, where the usual assortment of vendor representatives sell their wares to wary users from all sectors of industry and government.

> Interop is now a commercial enterprise where vendors sell their wares to wary users

One contributing factor: Vendors have started using standards support as a competitive weapon rather than as a means of cooperating for users' good.

Even the Interop demos have become less of a sanctuary against vendor rivalry. Two years ago, Fibronics International circulated reports of competitors' products that performed below par in an FDDI demo. This broke an agreement signed by all participants in Interop demos not to disclose performance results.

Fibronics was banned from Interop demos the following year. But the damage was done.

Indeed, a network technician from a scientific firm complained over coffee that Interop just isn't the same anymore. "It used to be a lot more fun," he said.

A lot more useful, too.

Horwitt is a *Computerworld* senior editor, networking.

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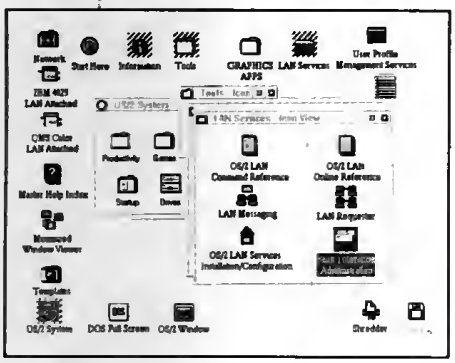

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DEC to focus on database market through Alpha

By Melinda-Carol Ballou

■ Digital Equipment Corp. will use the muscle of its new Alpha AXP systems to target the database market by optimizing Rdb for Alpha server platforms on Open VMS, Microsoft Corp.'s Windows NT and OSF/1. DEC will also support Microsoft's Open Database Connectivity (ODBC) and other standards.

Analysts said that while DEC's relationship with Microsoft may help the company, marketing Rdb outside of DEC's installed base will be a challenge. DEC must compete against the effective marketing organizations of relational database management system competitors such as Sybase, Inc. and Oracle Corp., which are already well-established in the client/server, open systems market.

DEC officials said they hope the high performance and large memory capacities offered by the Alpha platforms will ultimately make them attractive to users seeking to perform data "mining" — rapid processing of large amounts of data in parallel or prefetching pages, for instance.

"A good section of the DEC market is [made up of] high-end production systems, and the high-end Alpha boxes will put us in a different space," Steve Hagan, senior engineering manager for Rdb, said about the advantages of Alpha compared with VAXs. "The initial version on Alpha will be able to run 10G bytes in memory, for instance."

DEC has already prepared Rdb for running on Alpha machines by developing a dynamic optimizer that allows users to automatically make use of the increased amount of buffered storage available with Alpha.

Some users agreed that Alpha as a high-end server for Rdb is advantageous.

"With the memory capabilities of Alpha, you could store everything in memory in buffers so that you don't have to go out to disk all the time, reducing I/O [performance bottlenecks]," said Martin Keiser, a senior specialist at Du Pont Co. in Newark, Del.

Migration route

DEC officials described the process by which they migrated Rdb to Alpha — part of which involved the creation of an Rdb code generator that will put out VAX or Alpha code and the addressing of data alignment issues.

"Depending on which platform you're running on, you'll get code which is optimized for that platform. The disk structures will be identical, so there will be essentially no database conversion required to move [Rdb] from VAX to the Alpha [platforms]," Hagan said.

Mixed clustering is another key feature for making the transition that Rdb already supports. This means users will be able to run different versions of Rdb on VAXclusters or on clusters that mix VAX and Alpha platforms.

In the past, Rdb has been criti-

Alpha, *page 81*

HP shifts pricing gears

HP 3000, 9000 users will pay fees based more on usage

By Mark Halper
PALO ALTO, CALIF.

Not all software pricing is created equal, as Hewlett-Packard Co. will prove this week when it reveals a shift in fee structures for its MPE and Unix programs.

As HP told users in August, the company is moving away from processor-based pricing, under which users have been paying more for software as they add power to their hardware (CW, Aug. 31).

But the nature of that shift varies according to whether the user is running MPE/IX or HP/UX. MPE/IX is the proprietary operating system with Unix hooks for the HP 3000 minicomputer, and HP/UX is HP's Unix implementation for its HP 9000 minicomputer.

More users, more money

Under the new pricing scheme, which took effect last week, HP is moving HP 3000 users to a usage charge under which an information systems shop would pay more as it adds users. The shop would not pay more for simply adding or upgrading processors.

"This could be good," said Rodger Lindquist, manager of business systems development at Hercules, Calif.-based Bio Rad Laboratories, Inc.

Lindquist said Bio Rad runs three HP 3000s with "a lot of batch-intensive work with few users." About 80 users tie into separate manufacturing and distribution systems, each of which is built to support up to about 400 users. With HP's pricing paradigm shift, Bio Rad could pay less for software.

HP is also moving HP 9000 users off a tiered processor schedule but is not implementing a per-user fee. Rather, it is basing pricing on system expandability, according to HP software planning manager George Liddle. Although the new 9000 pricing permits processor upgrades without additional software charges, it is not as per-user-oriented as HP's new 3000 pricing.

HP is taking the separate approaches because of differences in markets for the HP 3000 and HP 9000, Liddle said.

Access discrepancies

Lindquist suggested that HP is not placing HP 9000 shops on a straight per-user basis because "a lot of people have access without making direct connections." Users can tie into the HP 9000 through local-area networks that are not as readily available to HP 3000 users, he said.

HP is implementing the HP 3000 software pricing scheme gradually, starting first with the operating system and selected system software last week. The per-user fees will kick in for other system software next month.

The new pricing will not apply to application software until the middle of next year, when HP is scheduled to build its Network License Server (NetLS) software into MPE/IX. NetLS manages system access and monitors usage. HP already builds it into HP/UX and has licensed it to other system vendors, including IBM and Silicon Graphics, Inc.

In a related announcement, HP said it plans to soon increase the number of HP/UX applications with NetLS calls. The company now offers a handful of those applications.

HP also said last week that it had simplified its support prices.

One step ahead

In Hewlett-Packard's installed base of multiuser computers, the HP 3000 still holds an edge over the HP 9000. As of the end of 1991, according to International Data Corp., there were 13,732 medium-scale HP 3000s in use, compared with 4,972 medium-scale HP 9000s. At the small-scale level, the HP 9000 is much closer to the HP 3000.

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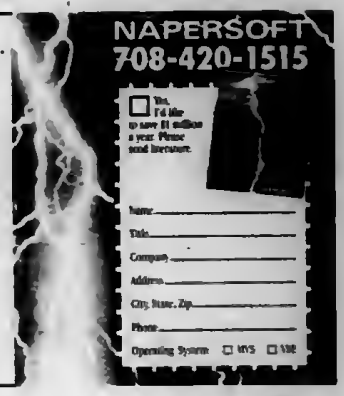

IBM wins outsourcing deal at 11th hour

By Mark Halper
WEST NYACK, N.Y.

Electrical and cable manufacturer BICC Cables Corp. was all set to sign off on a data center outsourcing deal last month with services vendor Genix Corp. when something happened on the way to the closing.

IBM swooped in with an eleventh-hour counter pitch that BICC found irresistible: an offer to essentially lease remote computer space that eliminated the need for its own information systems real estate.

"Genix had made a super offer, and we had drafted a letter to them," recalled Sal Tramaglini, BICC's MIS vice president.

But as the $1 billion company prepared to glide into its transition from an interim outsourcing contract with Litton Computer Services to Genix, "IBM made an offer we couldn't refuse," according to Tramaglini.

In short, IBM's price beat Genix, and IBM worked its magic by exercising computing wherewithal that translated into economies of scale that Genix and others could not match, Tramaglini said. He declined to state the contract's value.

The successful IBM bid — BICC had rejected an earlier IBM proposal — entailed combining BICC's data center operations with those of a BICC sister company in Toronto, Phillips Cables Ltd. An IBM Canadian affiliate, Information Systems Management Group — a Regina, Saskatchewan, outsourcer 51% owned by IBM Canada Ltd. — was already processing for Phillips. Both Phillips and BICC are owned by BICC Group PLC, a $6.5 billion London-based company. So IBM offered use of a single dedicated processor in Irving, Texas, to run both companies.

"They made it a sweetheart deal for us," Tramaglini explained.

Not through ISSC

IBM's winning offer did not come from the computer giant's Integrated Systems Solutions Corp. (ISSC) outsourcing subsidiary, although an ISSC solution had been on the negotiating table at one point.

> In short, IBM's price beat Genix's.

Rather, IBM won the deal through its IBM Information Network (IIN) group, which provides network services and remote processing. IIN is scheduled to enter the ISSC fold in January through an IBM joint venture with Sears, Roebuck and Co.

Under the provisions of the 1956 Consent Decree, IBM essentially will be limited to providing the processing power while BICC keeps its computer operators. In effect, Tramaglini explained, BICC's outsourcing deal is no different from a leasing deal under which IBM would install equipment on site for BICC to operate. BICC will operate the remote processor from terminals at its own site.

"I get the benefit of not having to provide floor space for the processor," Tramaglini said. While IBM's detractors said IIN starts with an unfair hardware cost advantage, Tramaglini noted that rival outsourcers could achieve competitive costs in the used computer market.

Other outsourcers that BICC evaluated included Electronic Data Systems Corp., Litton Computer Services, Mellon Bank Corp. and May & Speh, Inc.

BICC had been buying services from Litton on a monthly basis. Litton had taken over from BICC's previous outsourcing provider, ISI, which went out of business.

BICC has about 17 million instructions per second of processor requirements.

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The hard way.

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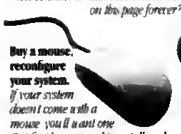
Upgrade your memory, reconfigure your system. *Add memory to a Mac, and it reconfigures itself accordingly. But add memory to a PC, and you'll almost always have to run a setup program to configure the new memory – or the computer won't know what to do with it.*

Add Windows, buy a new PC. *Most PCs in use today weren't designed for graphical computing. So if you want to run Windows, you may have to buy a new computer. Why not consider a Macintosh and avoid all the problems on this page forever?*

Add almost anything, reconfigure your system. *Expanding your PC's capabilities can be amazingly frustrating. But a Macintosh easily adjusts to whatever extra device you add to it.*



Buy a mouse, reconfigure your system. *If your system doesn't come with a mouse, you'll want one. But first be prepared to install and configure a special software driver. (No need with a Mac – you just plug it in.)*

Play and record sounds, reconfigure your system. *Multimedia promises to be the future of computing. But most PCs aren't ready for it. So if you want to work with sound, it'll cost you time and trouble – not to mention money. On a Mac, sound is built in.*

Change monitors, reconfigure your system. *Add a new monitor, and you'll have to reconfigure your entire system – or your monitor could look like this one. A Mac recognizes a new monitor and adjusts to it automatically.*

Whoops! *When you add something to an ordinary PC, you may have to "reconfigure" your system – a process of hardware and software adjustments, which can be complex, tedious, and take up hours of your time.*

Call for help, write a check. *There is one easy way to expand a complicated PC – hire somebody else to do it for you. Over time, of course, that can wind up costing you more than the PC.*

Add peripherals, reconfigure your system for each one. *Want to add a CD-ROM or hard disk drive? Then prepare to spend hours installing cards, flipping switches and editing files – for each one. With a Mac, you can add up to seven peripherals by simply plugging them in and clicking a button or two.*

Add printer, adjust DIP switches. *Hooking up a printer seems easy. Until you set your DIP switches, install your driver, locate your Windows diskettes, make an error and start all over again.*

Expand your PC, take two aspirin. *Inevitably, you'll want to expand your computer's capabilities by adding extra devices. The more instructions you slog through and switches you fiddle with, the more time it will take. And the more pain reliever you'll need.*

Manual labor. *Software like Windows purports to make things easier. But the reality is: you'll still spend hours reading manuals just to make it all work – time you could spend doing more useful things with your computer.*

On a typical PC, even adding a simple hard disk can be extraordinarily complicated. You'll probably have to "reconfigure" your system – the time-consuming process of telling your computer what pieces you've added. You may have to edit complex CONFIG.SYS and SYSTEM.INI files, install special device drivers and fiddle with DIP switches. And, of course, building even a basic network is extremely difficult – what with installing

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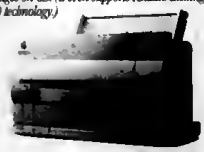

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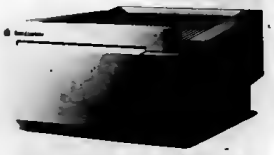

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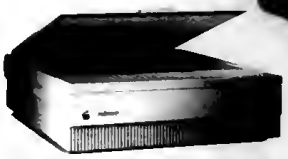

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DEC to focus on database market

CONTINUED FROM PAGE 77

cized as a proprietary database. But how successful can DEC be with Rdb outside of the company's traditional user base of VMS platforms? While Rdb has previously been available only on VMS, DEC will offer Rdb on OSF/1 by March and on Windows NT by the middle of 1993, DEC said.

These ports may initially be achieved by porting a Bliss compiler to the other operating systems, but the company is also re-engineering the Rdb database for C, which will make it more easily portable to additional operating systems. Hagan said such a port would be transparent to users and would not affect their applications.

Resources lacking

Although Rdb will no longer be limited to VMS and analysts praised the database engine, DEC currently has little or no marketing resources in place to sell it [CW, Nov. 23]. In addition, NT and OSF/1 are relatively untried, and users with large production applications are unlikely to go with them in the near future.

"Even on VMS it could presumably be used as a server for client/server applications, but few people consider it. [DEC] really is not positioned for the market that they are trying to enter from either a marketing or an application development point of view," said Rich Finkelstein, president of Performance Computing, a market research firm based in Chicago. He added that Microsoft is a strong partner for DEC and will help it focus market attention, but "DEC will have to put tremendous marketing effort behind [it] to compete against the marketing and sales capabilities of Oracle and Sybase."

DEC has also now incorporated support for Microsoft's ODBC client support into Rdb. ODBC is a database driver that lets Windows applications use SQL queries to access RDBMSs and is based on specifications from the SQL Access Group. It will let users of the Microsoft Access database access Rdb data.

Michigan eyes IS payback

By Thomas Hoffman
LANSING, MICH.

A systems overhaul being conducted by the state of Michigan's Department of Social Services (DSS) is expected to save the agency up to $40 million annually by eliminating scores of errors and fraud that plague the current network environment.

Last month, the state named Unisys Corp. as the primary contractor for developing a new client/server architecture that will support more than 6,000 caseworkers in 130 offices statewide. Norm Charles, the chief information officer at DSS, said the project's primary goal is to increase the accuracy and efficiency of the state's welfare caseworkers who determine public assistance eligibility for more than 750,000 Michigan citizens.

Norm Charles *says the new network will bring accuracy and efficiency*

Other vendors bidding on the six-year contract included IBM and Bull HN Information Systems, Inc., the incumbent vendor. The contract will cover equipment and services from more than 30 information systems vendors.

Charles said the process DSS uses to determine eligibility is very paper-intensive, and because the current network is not fully automated, caseworkers are forced to manually gather most information on public assistance applicants from credit bureaus, the Department of Motor Vehicles and other state-run agencies.

The new network, Charles said, will be designed to provide caseworkers with new automated features, such as electronic interfaces to banks and government agencies, as well as access to government databases. Charles said he expects the new network to help DSS caseworkers drastically reduce errors resulting from manual procedures and fraudulent applications.

"The new network will provide our caseworkers with more accurate determinations of eligibility and benefit levels," he said.

Under the current network, caseworkers using Unisys CTOS workstations are connected via T1 links to a three-processor Bull HN DPS 9093 mainframe computer at the central data facility in Lansing. However, Charles said, the network does not provide DSS caseworkers with the integrated level of support required to process budgeting, financial eligibility calculations and benefit payments because there are few automated operations.

The $60 million network is part of a $90 million project called the Michigan DSS Assist welfare eligibility automation program. Charles said the other $30 million is earmarked for additional staffing, facilities upgrades and administrative costs as part of the Assist program.

The new network will link more than 6,200 Intel Corp. 80386-based workstations to two Unisys 2200/644 mainframes in Lansing using 144 Unisys U6000 servers over a Hughes Network Systems, Inc. X.25 packet switch network with a T1 backbone. The U6000 servers are intended to offload application control functions from the mainframes and provide electronic mail, office automation and workstation control services for the client PCs.

Charles said the network will be designed to conform with the U.S. Government Open Systems Interconnect Profile network standard. DSS will use the Unisys OFIS E-mail system statewide.

Other uniform software packages to be used throughout DSS include Lotus Development Corp.'s AmiPro 3.0 word processing system and Microsoft Corp.'s Excel for Windows spreadsheet package. Unisys Ally and Mapper computer-aided software engineering/fourth-generation language tools will be used for application development and ad hoc reporting, respectively.

DSS plans to test the network in phases with several counties and offices during a 12-month period. Charles said he expects the network to be fully operational within three years.

DEC unveils ESP500 SCSI-2 family for OEM market

By Melinda-Carol Ballou

Digital Equipment Corp. recently announced the ESP500 family of SCSI-2 Solid State Disks (SSD) for the OEM market at a price of $11,500 for evaluation units, which DEC officials said is below the cost of comparable offerings.

The ESP500 SSDs offer a 5¼ in. form factor and can be mirrored, striped and bound in volumes like magnetic disks. Data is placed on them using Small Computer Systems Interface (SCSI)-2 commands. The Model ESP530 offers 267M bytes of capacity, while the model ESP510 offers 107M bytes and a Data Retention System that combines power sensing logic, batteries and a hard disk to back up data in the event of a power failure.

This marks DEC's first step in building an SSD OEM business, DEC officials said.

SSD devices use solid-state dynamic random-access memory to achieve a high rate of I/O requests per second with data access rates of as much as 100 times faster than magnetic disk, they added.

Evaluation units are available now, and volume shipments are scheduled to begin in the third quarter of 1993, according to DEC officials.

[redacted]

System software

BlueLine Software, Inc. has released Vital Signs for VTAM 2.0, the newest version of its network and VTAM performance monitor.

The product provides MVS, VM and VSE sites with the ability to monitor and report on both network and VTAM performance data via historical reports and real-time displays, the company reported.

New "Point and Shoot" capabilities enable users to view network statistics by navigating the network. Starting at a high-level network or sessions statistics display, users place the cursor on a line to view performance data down to the logical unit or terminal level. It also includes a centralized performance database. Additional features include a centralized performance database and Dynamic Definite Response time measurement.

Prices start at $8,680.

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Tone Software Corp. has announced Release 4.2 of OMC-Print, a print management tool.

Without respooling, the product provides spooled output routing to almost any VTAM print device. According to the company, any type of data residing in the JES spool can be printed on non-JES print devices.

OMC Print functions include an enhanced Command Display Facility that can be run as an ISPF application; an expanded job selection criteria that includes an external writer name; Streamlined Command Display Facility panels that combine several functions into fewer screens for output delivery; plus expanded device support, which includes IBM's Application System/400, System/36, System/38, PC and bar-code imprinting devices.

Prices start at $11,000.

➤*Tone Software*
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Software application packages

WorksRight Software, Inc. has announced Estimate Master and Work Diary, software systems designed for the IBM Application System/400.

According to the company, Estimate Master can classify expenses and produce the simplest or most complex estimates.

Because the product is a multiuser system, it can be used to simultaneously work on up to 999 estimates.

Estimate Master and Work Diary each cost $199.

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In Brief

Andersen to port Foundation to Sun

Andersen Consulting plans to port Foundation, its computer-aided software engineering (CASE) workbench, to run on **Sun Microsystems, Inc.** Unix workstations and servers, including Sun's new SPARCcenter 2000 high-end processor. Andersen announced a similar arrangement with **Hewlett-Packard Co.** two weeks ago.

Reverse-engineering tool ships for Wang

Lansa USA, Inc. started shipping a reverse-engineering tool designed to migrate **Wang Laboratories, Inc.** software to run on IBM's Application System/400.

No need to rewrite application software

Kendall Square Research Corp. is now shipping Micro Focus Cobol/2 with Animator and Micro Focus Toolbox on Kendall's KSR1 family of supercomputers. The tools let users port mainstream business applications to KSR1 machines without rewriting the code, according to a spokesman.

Easel to release tool

Easel Corp. announced Enfin/2 SQL Edition Version 2.0 for Windows, an object-oriented tool based on Smalltalk from **ParcPlace Systems, Inc.** It helps developers build Microsoft Corp. Windows- and IBM OS/2-based applications using point and click and other object-style techniques. The $3,995 product is due out next month.

Nynex ships CASE management tool

AGS Management Systems, a subsidiary of **Nynex Corp.** in King of Prussia, Pa., started shipping Windows and OS/2 versions of firstCASE, a process management system for use on application development projects.

Workbenches offer cross-platform support

By Garry Ray

As talk of client/server computing gets dangerously close to the overblown hype of artificial intelligence and computer-aided software engineering (CASE), a new generation of workbenches is arriving that could save the notion from a similar fate.

The workbenches, which span the range from high-end commercial tools to end-user programming aids, could significantly reduce the cost and complexity of application development for multiple platforms in client/server environments, according to users and analysts. However, analysts also said the new tools currently lack critical functions needed to coordinate large development projects.

"Once you take two developers and put them into team development, it's not very long before you need team support tools such as version control," said analyst Tony Picardi, director of software research at International Data Corp. in Framingham, Mass.

In addition, Picardi said, the workbenches need to provide or support utilities such as regression testing and performance analysis tools. "Then you're back to CASE again," he added.

Workbenches
These support Unix, Windows, OS/2 and Macintosh platforms. Developers can code once, then compile for multiple operating environments. Shopper say developers will transfer their vendor dependence.

Despite that hurdle, tool vendors evidently see no shortage of interest in workbenches that support visual programming, software reuse and application deployment on Apple Computer, Inc.'s Macintosh, Microsoft Corp.'s Windows and various Unix platforms. "I've seen 15 or 20 of these environments in the last year. It's definitely a trend," said Dan Shafer, editor and publisher of "The Inventive User Letter" in Redwood City, Calif. Noting that "cross-platform issues are less important to users than to developers," Shafer said that "to developers, porting is a huge pain."

In addition to cross-platform support, the workbenches typically include editors, debuggers, browsers and other utility programs within an integrated environment. Database support for Oracle Corp.'s Oracle or Sybase, Inc.'s Sybase is generally included to develop client/server applications.

Cross-platform programming benches

	Released	Client platform	Target platform	Language	Tools	Database access	Price per seat
Component Workshop Component Software Corp.	11/92	Macintosh	Windows, Unix	C++	Incremental compiler, editors, browsers, class libraries, inspector	N/A	$2,495
Galaxy Visix Software, Inc.	6/92	Unix	Windows, OS/2, Macintosh	C, C++	GUI builder, editors, HelpWriter, class managers	Oracle, Sybase	$9,600
VisualWorks ParcPlace Systems, Inc.	10/92	Windows, Macintosh, OpenLook, Motif	OS/2, Next	Smalltalk	GUI builder, editors	Oracle, Sybase, EDA/SQL	$2,995-$4,995
Parts Digitalk, Inc.	10/92	OS/2 2.0	Windows	Smalltalk	GUI builder, editors	BTrieve, others with optional Parts database interface	$1,995
Synchroworks Oberon Software	Q2 '93	N/A	Motif, Solaris	C++	Editors, browsers, data modeling	Embedded OODBMS, Oracle, Sybase	Developer edition $7,250 Visual tools $4,750 Runtime $1,500

CW Chart: Michael Siggins

Two categories

More recent entries to this new genre of tools fall into two basic categories: high-end workbenches for independent software vendors and corporate application developers writing complex applications and more accessible, visually oriented tools designed for quick development of in-house applications (see chart).

That division is also reflected in the programming languages supported by the two types of workbenches. High-end tools, such as Visix Software, Inc.'s Galaxy and Component Software Corp.'s Component Workshop, tend to demand C or C++ programming.

More accessible workbenches such as ParcPlace Systems, Inc.'s Visualworks and Digitalk, Inc.'s Parts workbench are based on Smalltalk. However, a developer's intention will dictate the most appropriate workbench. "Some people prefer to work closer to the iron with C, and others want to get their applications done faster with Smalltalk," said Judith Hurwitz, president of Hurwitz Consulting Group in Newton, Mass.

But technology is not the only driving force behind the recent deluge of cross-platform workbenches. Consultants, systems integrators

Workbenches, *page 85*

Decision time: PC development tools for Windows NT, OS/2 arrive

By Kim S. Nash

With a bumper crop of PC development tools unveiled recently for IBM's OS/2 and Microsoft Corp.'s Windows NT, corporate and commercial software builders have their hands full choosing products for creating client/server applications.

The emerging generation of tools comes closer to fulfilling the promise of building truly client/server programs than previous offerings, said Judith Hurwitz, president of Hurwitz Consulting Group in Newton, Mass. The initial wave focused on adding graphical user interfaces to host-based applications; the new tools do more to split the processing logic of an application so that part of it runs on a client and part on a server, she said.

> Many tools do not need to be tuned for a specific operating system to do the job.

Keep in mind, however, that many PC tools are less robust than their mainframe and midrange counterparts and often handle only one or two discrete development tasks. And, with few integrated computer-aided software engineering workbenches in this market, programmers must be careful to cover the critical bases of client/server development, users and analysts said.

In addition to the usual suspects, such as compilers and screen generators, tools that do project management and version control are important for keeping track of work

Tools, *page 85*

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Frank Dodge

A winning client/server formula

When I learned about the client/server movement a little more than two years ago, I couldn't believe what I heard. Desktop software applications more powerful and flexible than mainframe solutions? Heresy. Coming from 20 years in the mainframe world as I did, at McCormack & Dodge, I found it unbelievable that the mainframe could be replaced with a PC — a toy.

As my interest grew, I talked to many companies that were planning a move to client/server. Their biggest motivations were to save on high maintenance charges, take advantage of better software and escape from old, proprietary hardware/software platforms.

Analysts I spoke with concurred. A poll conducted by Forrester Research, a Cambridge, Mass.-based market research firm, found that 48 out of 50 companies are already downsizing because of the opportunity for dramatic new applications with functionality just not achievable on the monolithic mainframe.

> You cannot salvage and repackage old code to fit the new client/server architecture.

I also talked to companies that have developed successful client/server applications. To my surprise, I found out how quickly and economically client/server applications could be developed. To prove my point, my company developed highly functional and sophisticated client/server financial applications in one year — written from scratch. And we used a fraction of the staff we would have needed for a mainframe application, without cutting corners.

Sound too good to be true? Believe it; it's the wave of the future. Client/server applications will rapidly replace old mainframe systems, with relatively standardized applications being first.

It won't be easy

I'm making it sound easy. It's not. The point is that you shouldn't be afraid of it. Client/server applications can be developed quickly and economically. There are, however, a few premises that must be in place to make this happen. First, you must develop the application from scratch, and second, you need top-notch, senior people for the job.

With that in mind, where do you start?

Is there one definition of client/server software? The term has caused so much confusion that its value to both end users and software vendors is decreasing.

What industry experts and customers are finding is that a "true" definition for client/server software is emerging as a standard. It includes four critical components:

- Software designed for an SQL relational database (such as Ingres, Sybase or Oracle).
- Software designed for advanced networking capabilities (such as Novell or Microsoft Windows NT).
- Software designed for a GUI (such as Windows or Motif).
- Software that splits the application functionality between the desktop machine and the server machine.

Each piece plays a significant role as it fits together in the architecture.

A typical, incorrect way of approaching client/server is an evolutionary approach by which the mainframe acts as the server connected to networked PCs. Many mainframe software vendors maintain that this protects current customer investment in their technology and reduces the learning curve. The fact is, you cannot salvage and repackage old code to fit the new client/server architecture — you must start from scratch to truly exploit its potential. Customers will save significant time and money by avoiding the evolutionary approach.

The key is the software design. The combination of a relational database, a GUI, networking and code splitting are so different from old mainframe environments that applications need to be totally rethought. The technology used to be a barrier, an inhibitor — now it is an enabler. Limitation on applications is now dependent on the creativity and imagination of the designer.

The team

This kind of design approach requires senior development staff: senior systems architects, senior application architects, senior database designers and programmers. These people will be critical to successful product implementation in a timely fashion. Think in terms of half the time and a fraction of the cost.

The armies of people who worked on typical mainframe projects are not needed here. What works is just a handful of senior specialists working closely together, unencumbered by endless meetings, countless memos and old technology. Today they are surrounded by plenty of white boards and armed with modern, exciting technology tools. This is emerging as the new model of development.

If you start from scratch with a senior team of developers, you can develop world-class client/server applications quickly and economically. Three years ago this wasn't possible, but it is today. Don't be afraid — dive in!

Dodge is president and chief executive officer of The Dodge Group in Waltham, Mass.

Benches offer cross-platform support

CONTINUED FROM PAGE 83

and corporate developers also consider the tools to be critical components of corporate information systems strategy.

Because they allow applications to be developed once and then deployed on a number of platforms, "you preserve your investment in the core business logic supporting corporate applications," said Michael Beller, a principal at systems integration firm Technology Solutions Co. in Chicago. Beller declared that typical $5,000- to $10,000-per-developer costs for the workbenches are "peanuts, compared to the $1.5 million you'd otherwise spend supporting the next generation of an operating environment."

That points to another reason the workbenches are gaining notice: developers' desire to spread their potential risk across a variety of platforms. "Developers are not willing to bet on one operating system anymore," Hurwitz said.

With lingering memories of their 1980s commitment to OS/2, which caused many to "lose their shirts," Hurwitz said corporate and commercial developers "can no longer do one platform and be assured that they're doing the right platform."

Decision time: PC development tools

CONTINUED FROM PAGE 83

in progress. "That sometimes gets overlooked," said Doug Hamilton, president of Hamilton Laboratories, an independent software developer in Wayland, Mass. Hamilton Labs is beta-testing Windows NT and developing Hamilton C Shell for Microsoft's 32-bit operating system, which is due to ship first-quarter 1993.

Many tools do not need to be tuned for a specific operating system to get the job done. Tools such as source code editors and file browsers used to build DOS applications will work similarly under Windows NT or OS/2, Hamilton said, which could stretch your development budget.

A caveat comes in the form of budgeting for Windows NT development. Its software will theoretically be able to run on several different hardware platforms, including PCs and servers. That means development teams working on different boxes may have to buy multiple copies of Windows NT tools for different systems.

The infantile market has yet to settle on fair pricing for such cases, Hamilton said. After Windows NT has been out a while, the situation will smooth itself, probably by summer 1993, he said.

Corporate developers might also want to plumb their vendors for specifics on availability of OS/2- or Windows NT-based products.

"They could be building them already, which would save you from establishing a relationship with a new, untried vendor," Hamilton explained.

The Free Software Foundation is a source for, well, free software. Bulletin board cruisers can pull down products such as Gnu, a Unix shell that has been ported to Windows NT.

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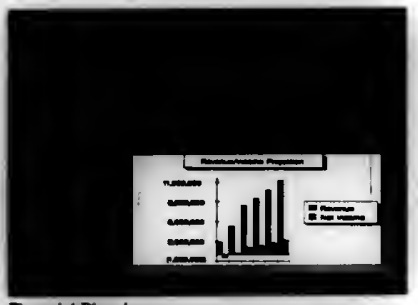

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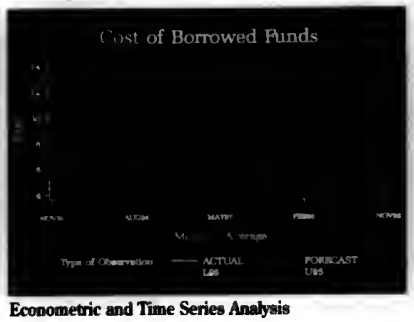

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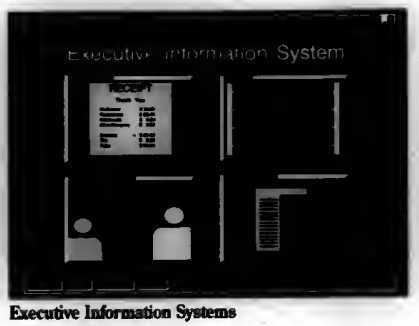

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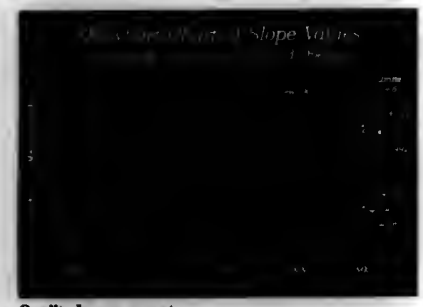

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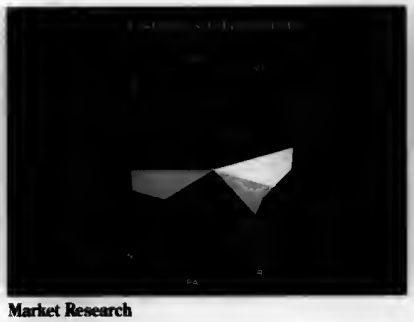

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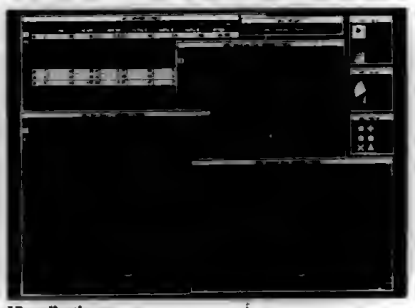

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The ENEMY WITHIN

New technology is only half your LAN security problem. Users are the rest.

By Joseph Maglitta and John P. Mello Jr.

If new technology doesn't succeed in fraying your local-area networks and nerves, then wait: Your users probably will.

That's the word from experienced information systems managers, consultants and vendors of network security products, who say the widespread embrace of downsizing, client/server architecture, electronic mail and open systems is making LAN security, never great, an even bigger headache.

"No system is totally secure," says Jim Hansell, vice president of investment systems at the New York office of securities firm UBS Asset Management. "But LANs are less secure than mainframes; they need to plug those holes."

Add the explosion of laptop computer use, the appearance of new viruses aimed at networks, groupware and users who often don't know or care about security and licensing issues, and it's easy to see why legions of IS managers, systems managers and LAN administrators are nervous.

Novell, Inc.'s recent disclosure that any NetWare LAN user can give himself supervisor privileges only heightened anxiety.

These pressures couldn't come at a worse time. Record numbers of U.S. corporations are moving critical applications from mainframes to distributed platforms built on PCs and interlinked LANs. According to International Data Corp. in Framingham, Mass., some 400,000 LANs and LAN operating systems were sold last year in this country alone.

More users means more problems, consultants say. Because so much important corporate business is now handled by networks, concern about LAN integrity is no longer confined to individual departments or groups. Keeping people and viruses out of strategic LANs has become a sticky issue.

"When you put more control at distributed sites, like you do with LANs, you increase your security risk," acknowledges Mark Dodge, telecommunications manager at United Parcel Service, Inc.'s IS group in Mahwah, N.J. "But the cost savings of LANs are so great that it's worth the security risk."

Unauthorized network access was the second most serious concern of 1,153 IS professionals recently surveyed by Datapro Information Services Group, the Delran, N.J., researcher (viruses topped the list). Yet only 2.3% of respondents reported having a company policy on network or Unix security.

Government is hardly in better shape: One recent survey of 150 federal agencies, including defense, reported that although 90% have a security policy, nearly half have a security budget of $1,000 or less.

Signs of life

There are signs of stirring, however. Some 1,300 people attended the 19th Annual Computer Security Conference held in Chicago last month. Many sessions dealt with security in downsized, distributed, client/server environments, as did talk at the recent Comdex/Fall '92. Technical journals have also begun to address the problem.

In recent months, industry vendors, including Novell, Microsoft Corp. and IBM, have rushed to address concerns with LAN security. Some have beefed up security features in their products or introduced new offerings (see story page 89).

A specialty market in LAN security tools and virus-detection products is also flourishing.

Still, critics say there's lots of room for improvement.

Security, *page 89*

Inside

Vendor update.

One manager's security secrets.

Pages 89, 92.

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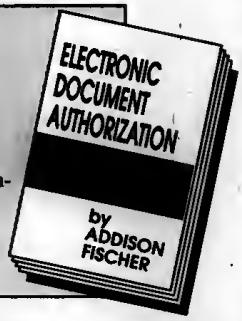

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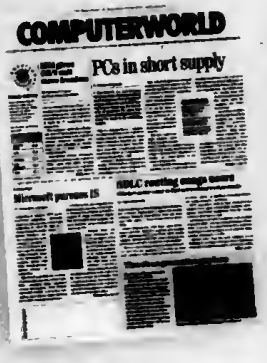

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LAN security problems

CONTINUED FROM PAGE 87

Security "is an area where network operating systems fall flat on their face," says Howard G. Conrad, chief technical officer at Trellis Network Services, a systems integrator. "How can you audit what's being used by whom and how long?"

Conrad is especially tough on nonmandatory security. A big problem, Conrad says, is that network operating systems don't make security mandatory. This, he continues, "allows the user to say, 'Yeah, I want it,' or 'No, I don't want it.' That's a big problem."

People problems

It's widely agreed that users, not new technology, pose the biggest threat to LAN security.

"The whole damned thing gets down to people discipline," says Harry Demaio, a senior manager and security specialist at Deloitte & Touche. Users, he says, must be taught sound security procedures — and must adhere to them.

John Worthen, president and chief executive office at Pyramid Development Corp. in Rocky Hill, Conn., adds: "The most malicious destruction — 80% of the security breaches — is from insiders. They're normally not stealing information; they're normally destroying it."

Little wonder that many security professionals say the first line of defense should be an educated — and contained — user community.

IS fights back

"Information protection is technology and psychology," observes Demaio, former director of corporate security programs at IBM. "You can't do the whole thing on the technological plane alone."

Indeed, scores of IS chiefs are struggling to tame LANs with a blend of products and practices aimed at plugging holes in operating systems, databases or applications. Some have set up security hot lines.

TRW Information Services in Anaheim, Calif., for example, recently began using new computer terminals with embedded passwords. Southwestern Bell also installed new devices and procedures, according to a company spokesman. Both companies have suffered from data hacks during the last year (CW, July 13).

Hundreds of corporations, including MCI Communications Corp., Unum Life Insurance Co. and Motorola, Inc., are aggressively tackling security issues.

Most efforts focus broadly on two areas: keeping outside intruders away from networks, and managing insiders.

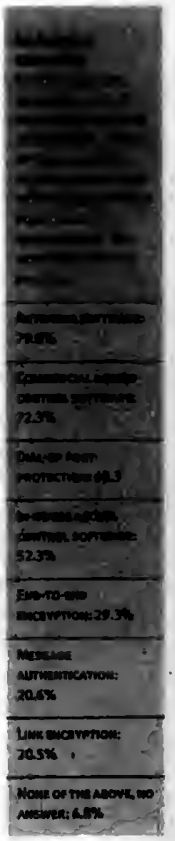
At the University Hospital Consortium in Oak Brook, Ill., network administrator Jack Skalon says he relies on NetWare's built-in security features, plus a few commonsense policies, to keep security tight among his 1,15 or so users on 10 Novell servers.

Besides scanning the network "four or five times a week," Skalon says IS makes sure that all software is licensed and certified virus-free by an end-user liaison. Plus, the computer room is locked and off-limits to all but a few selected supervisors.

While Skalon acknowledges that security policies are "really hard to police," he says users are complying. "Once you find viruses," he notes, "people tend to pay more attention" to rules.

At UPS, network drives are also scanned for viruses each day. Dodge, who is lucky enough to have a network administrator who handled minicomputer security in a previous job, has devised another clever tactic: Tying an IS audit into an annual accounting audit at all UPS sites.

Dodge explains: "This means that as we measure cost, we also check to see that our established security procedures are being followed."



Getting tougher

To combat the virus problem, some companies are enacting strict policies, including firing employees who do not scan floppy disks for viruses.

Hypobank in New York has taken a different tack. "We've disabled access to the A drive for all computers throughout the bank," explains Joe Sanchez, an assistant treasurer who oversees IS at the German bank.

If a user tries to insert a disk into the off-limits PC drive, a product called Watchdog Director made by Fischer International Systems Corp. in Naples, Fla., flashes a warning message. An audit trail is also created by the product, so IS can see who's been trying to load disks.

Experts say regardless of the tactic chosen, the trick is to be effective while avoiding costly overkill. Not every site, for example, needs bulletproof security, Demaio notes. "A password and a personal identification number may be all you want for networks that aren't carrying the organization's family jewels," he says.

Enough but not too much is the approach favored by DHL Airways, Inc., a unit of shipper DHL International. LAN security "is obviously a topic of importance to us," says Michael Lanier, chief information officer. "But we're not essentially dealing with Pentagon secrets here — we're running a mail service."

Key financial data is stored on a secure mainframe, according to Lanier. But he says the unit is moving to distributed networked Unix systems (IBM RISC System/6000s), and plans are afoot to bring in a new accounting system next year, probably a networked Application System/400. "IBM has committed to creating [security] capababilities in the networked arena," he says, "and we get early access."

While valiant IS efforts mount, managerial, technical and legal obstacles loom.

On the technical side, seamless security for heterogeneous networks and mixed platforms is a ways off. And each day, more IS managers discover a harsh reality: Client/server simply isn't built for security.

Experts say current National Security Agency data encryption standards, while effective, are not recognized overseas. And investigations continue into a serious crack discovered in the Data Encryption Standard (DES) last year by two Israeli mathematicians. If they are correct, DES, developed by IBM in the early 1970s, could be in serious jeopardy.

Finally, at present no standards exist for wireless data flow, also a big potential problem.

As for people issues, executive apathy remains a big foe. The problem is so bad that IS managers and consultants say it often takes a serious data loss before top executives take notice.

At Hypobank, for example, Sanchez says he spent five working days to eradicate the "Joshi" virus, which wiped out 40 important disks after being introduced into the company from a home PC. "It said to [management], 'Now do you realize how important security is?' " he recalls. "Ever since that day, no matter what I ask for that has to do with computers, they would never say no."

But top bosses can't be blamed too harshly, Demaio cautions. IS and users, he says, must also shoulder blame for poorly articulating security needs to vendors.

Central control needed

Perhaps the biggest challenge is a familiar one: Lack of IS influence over departmental LANs.

"This isn't the way the culture has grown up," says an IS executive at a major Midwest manufacturing company. "But there's too much critical information on these servers and LANs to leave maintenance and control up to the users. No matter what you call them, these are little mainframes. IS has to centralize control."

One IS manager relates that of 120 or so attendees at a recent security seminar, only a handful raised their hands when asked if IS exercised any meaningful control over LANs at their respective companies.

But growing duties could spell trouble for network administrators, many of whom are already juggling dozens of responsibilities, notes an IS executive at a New York company.

Despite the obstacles, hope remains. Smart cards, digital signatures and call-back systems are catching on. Some regional phone companies are experimenting with Caller ID, but not on a national basis as yet.

Also, in January, the National Institute for Standards and Technology in Gaithersburg, Md., drafted new minimum security standards for multiuser operating systems and access control.

And earlier this year, the Bush administration relaxed controls on some software with encryption capabilities. Vendors say the move could eventually lead to better security features in mass-market packages.

As long as the lure of fantastic savings and flexibility outweighs the risks, LAN security innovation will continue.

Computerworld staff members Michele Dostert, Carol Hildebrand, Elisabeth Horwitt and Nell Margolis contributed to this report.

Resources

Computer Security Institute: (415) 905-2310.

Information Systems Security Association: (312) 644-6610.

Magitta is a *Computerworld* senior editor, management. Mello is a free-lance writer based in Woonsocket, R.I.

[illegible] Inc. [illegible] information [illegible] or [illegible] file sharing.

Microsoft Corp. New Windows NT operating system will comply with C2-level security. Some versions may have LAN Manager network operating system improvements. Windows for Workgroups 3.1 makes network users protect applications with password.

Oracle Corp. New "Trusted Oracle 7" relational, integrated database provides multilevel security.

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IBM

Manager speaks out on secure LAN plans

An executive at a major Midwest manufacturing company, who requested anonymity, recently agreed to share his firm's tactics for protecting local-area networks with Nell Margolis, a Computerworld *senior editor, management. Some of his observations follow.*

"We're in the middle of major LAN security changes right now. Eight years ago, we let users create and control their own LANs. They could do basically whatever they wanted and had to justify what they did to their [respective] business unit heads.

"There was a lot of very important company data on those babies, and users didn't understand the need or have the means to protect it. As the pattern of a potential large-scale security breach began to emerge from the reports, the CEO came to a decision: He said, 'Let's get this thing fixed.'

"We began an enormous desktop security education program (35 training sessions of 1½ hours each) in headquarters alone. We're now doing this at all sites, not just in the U.S. but worldwide.

Like mainframe, like LAN

"IS is now using Novell LAN management software — and in a proactive way — to monitor and back up the LANs exactly the same way we do the mainframe. We've got about nine LANs in this building alone. We already had these folks in place and familiar with the Novell package. Why not use them?

"We brought [workstation servers] back inside physically — moved them right into the new data center here at headquarters. This is the safest place in the company, and that's where they ought to be.

"This is the direction things are moving in — I'm certain of it. In addition to that change, we had to redefine the network administrator's role. [Each administrator now shares authority and responsibility with central IS.] IS backs up every server, seven days a week.

"Was there resistance to IS' stepping into the LAN control picture? I can't tell you how much! Let me put it this way: I wear 'arrow' shirts.

"We did what we could to ease the transition. In our education stage, we told everything to folks at all different levels at the same time. This way, vice presidents on down heard the same words at the same time. That's extremely important.

Keeping at it

"You take away a LAN with 10 PCs on it, you're taking away a lot of control. And that's even if you don't take it away literally, physically, which in some cases we did. That was hard enough, but pulling away the program diskettes killed us. But we just kept on pounding away. It took almost a full year to [appropriate and lock up some 20,000 disks].

"And now we're beginning to deal with the security issues raised by a sales force that uses laptops. The salespeople need that device out there. But when they connect to the LAN, suddenly they're wired into major repositories of mission-critical information.

"That's a big shock to the company, but we've taken some security precautions. The salespeople themselves don't know how to sign on; they only know how to get to a program that gets to a program that does it for them. . . . We don't have to worry about a thief getting the data. We can't protect everything, but we protect the data that's on a C drive — that's gold.

"Are all users delighted with the new measures? No — but they're beginning to see the benefits of increased IS control over LANs. In the past year, we've had three major hard disk crashes. In all three, no data was lost because the people were adequately prepared. And in all cases, people admitted that before the security training, they hadn't been prepared."

Calendar

JAN. 10 - JAN. 16

Software User Documentation: Designing for Usability. Orlando, Fla., Jan. 11-12 — Contact: Digital Equipment Corp., Marlboro, Mass. (508) 467-6910.

Electric West '93. San Diego, Jan. 12-14 — Contact: The Fairfield Factor, Inc., Brookfield, Conn. (203) 775-0422.

Redundant Arrays of Inexpensive Disks Advisory Board Meeting. Sunnyvale, Calif., Jan. 13 — Contact: Joe Molina, Technology Forums, Lino Lakes, Minn. (612) 704-2379.

JAN. 17 - JAN. 23

Retailing 1993 A Turning Point. New York, Jan. 17-20 — Contact: Retail Services Division, New York, N.Y. (212) 244-8780.

The Canadian Software Re-engineering and Maintenance Conference. Toronto, Jan. 19-21 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

Outsourcing Conference '93. Dallas, Jan. 22-23 — Contact: Frost & Sullivan International, New York, N.Y. (212) 233-1080.

JAN. 24 - JAN. 30

Marketing the IS Organization Internally. Atlanta, Jan. 26-27 — Contact: Oulette & Associates Consulting, Inc., Bedford, N.H. (603) 623-7373.

JAN. 31 - FEB. 6

Downsizing Corporate Information Systems Conference. London, Feb. 1-2 — Contact: Amanda Stuart, IBC Technical Services Ltd., London (011-071) 637-4383.

Object World. Boston, Feb. 1-4 — Contact: Lynn Fullerton, World Expo, Framingham, Mass. (508) 879-6700.

Image World West. San Jose, Calif., Feb. 1-3 — Contact: Benita Roumanis, Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 328-9157.

Comnet. Washington, D.C., Feb. 2-4 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

FEB. 7 - FEB. 13

1993 UDMS User Conference. Keystone, Colo., Feb. 7-10 — Contact: Rebecca Campbell, Interactive Software, Keystone, Colo. (303) 987-1001.

Managing Enterprise Networks Conference. San Francisco, Feb. 8-10 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3870.

Expo Comm Mexico '93. Mexico, Feb. 9-12 — Contact: Ben Stauffer, E. J. Krause & Associates, Inc., Bethesda, Md. (301) 986-7800.

FEB. 14 - FEB. 20

1993 Symposium on Applied Computing. Indianapolis, Feb. 14-16 — Contact: Association for Computing Machinery, New York, N.Y. (212) 869-7440.

Mobile '93 Conference and Trade Show. San Jose, Calif., Feb. 16-18 — Contact: Technologic Partners, Larkspur, Calif. (415) 924-1274.

Distribution/Computer Expo '93 West. Anaheim, Calif., Feb. 17-18 — Contact: C. S. Report, Uwchland, Pa. (215) 458-6410.

FEB. 21 - FEB. 27

SynOptics Users Group Conference. Monterey, Calif., Feb. 21-24 — Contact: SynOptics Users Group, Santa Clara, Calif. (408) 988-2400.

Compcon Spring '93. San Francisco, Feb. 22-26 — Contact: John Barr, Motorola, Inc., Rolling Meadows, Ill. (708) 576-8706.

Software Development '93. Santa Clara, Calif., Feb. 22-26 — Contact: Miller Freeman, Inc., San Francisco, Calif. (415) 905-2741.

Seventh Annual Users Conference. Salt Lake City, Feb. 24-26 — Contact: Wasatch Computer Technology, Salt Lake City, Utah (801) 575-8043.

Doing Business in the Pacific RIM International Conference. Sydney, Australia, Feb. 25-26 — Contact: Computer Law Association, Fairfax, Va. (703) 560-7747.

FEB. 28 - MARCH 6

CompTel '93. Washington, D.C., Feb. 28 - March 2 — Contact: Trade Associates, Inc., Rockville, Md. (301) 468-3210.

Share '93. San Francisco, Feb. 28-March 5 — Contact: Share headquarters, Chicago, Ill. (312) 822-0932.

Advanced Object-Oriented Analysis and Design: The State of the Art. San Diego, March 1-4 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Sensors Expo West '93. San Jose, Calif., March 2-4 — Contact: Expocon Management Associates, Inc., Trumbull, Conn. (203) 374-1411.

Executive Track

The board of directors of the **Federal National Mortgage Association**, better known as **Fannie Mae**, recently elected **William E. Kelvie** executive vice president and chief information officer. Kelvie, who served as a consultant at Nolan, Norton & Co. prior to joining Fannie Mae as senior vice president and CIO in 1990, is responsible for the full range of the Washington, D.C.-based federal mortgage association's information technology systems.

At **Keuka College** in Keuka Park, N.Y., **Harry Smith** has joined the administrative staff as director of computer services. Smith comes to the liberal arts college from Cincinnati-based Cars Information Systems Corp., where he served as director of public sector services. He has also served as director of computing services at Baltimore-based Loyola College.

Wilbur L. Smither is the new CIO and senior vice president of customer information services at **Mary Kay Cosmetics, Inc.** A two-decade veteran of the business, management and information systems worlds, Smither comes to the Dallas-based cosmetics firm from Blockbuster Entertainment Corp., where he served as vice president of IS.

Arlington, Va.-based USAir recently promoted **John W. Harper** to the position of senior vice president of IS. Succeeding Harper at his prior post — that of vice president and controller at USAir and its parent, USAir Group — is **Ann Greer-Rector**.

Before joining USAir in 1991, Harper held financial management positions at Trans World Corp. and TransWorld Airlines.

Have you or a colleague in IS recently been promoted? *Computerworld* would like to share your news with the rest of the IS community. Please contact Senior Editor Nell Margolis at (800) 343-6474 to pass the news along.

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Do you measure up?

There are various methods out there for gauging the return on your IS investment. Find out how to use these measures to guide business decisions such as outsourcing, re-engineering, etc.

By Walter M. Carlson and Barbara C. McNurlin

When your chief executive officer asks you to quantify information technology's return on investment, just describing changes in systems staff productivity and service levels isn't enough. CEOs want the return put in terms of business improvements.

Unfortunately, chief information officers can rarely give a full accounting of technology's effect on business performance. The problem isn't lack of measurement methodologies — there are a growing number of those. The problem is knowing which measure to use in which business situation.

You want to get to know your measurements — whether quantitative, qualitative, ratios, percentages or comparisons — and where it makes sense to use them. In this way, you can help guide some of the most gut-wrenching business decisions, such as outsourcing, corporate funding, business process re-engineering, quality management and entering new markets.

You've heard and read a lot about getting more involved in the business. Here is your chance to make an impact:

Guiding *outsourcing* decisions

Companies today are exploring outsourcing in hopes of saving lots of money on in-house information systems operational expenses and capital investments. To know whether and which IS functions to outsource, you need to know not only how efficient the IS organization is but also how effective — in other words, how swiftly and accurately your systems department understands business needs and acts on them.

If you base your outsourcing decision on IS efficiency alone, you have an incomplete picture and may even make a misguided outsourcing decision. Cost savings shouldn't be the sole driver; improving the business is a crucial goal.

Measures of IS efficiency include time to complete projects, percentage of service level agreements met, operational costs and programmer productivity (using function points so that comparisons can be made between projects).

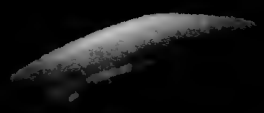
Measuring IS effectiveness and how it relates to business performance is more complicated.

One approach comes from CogniTech Services Corp. in Easton, Conn. Through research and analysis of 47 companies, CogniTech has identified 79 factors that define an effective IS organization in areas such as organization (amount of business unit control of deliverables), culture (leadership style, decision procedures), planning (formal planning processes, interaction with business units) and architecture (standards employed, policy flexibility).

The idea is to zero in on those effectiveness factors that need improving, thereby improving

Measure up, *page 97*

Where are you headed with your applications development?



BACHMAN

Continued from page 95

business performance. CIOs can quantify their effectiveness and focus outsourcing discussions on business performance factors (Are we effective in this area? Can the outsourcer be more effective?) instead of merely on IS costs.

CogniTech uocovered three performance measures — return on equity, earnings per share and revenoe vs. expense — that are relisble indicators of IS effectiveness. The company found that companies with high return on equity and earnings per share tend to have systems departments that coocentrate on being effective.

If your IS group falls into this category, you need to think twice about outsourcing. It might bring certain cost savings, but it might also damage the IS group's effectiveness and, by extension, harm the business.

CogniTech also discovered that companies with centralized IS functions concentrate on minimizing costs. Effective IS organizations generally have a more decentralized structure, with part of the systems department reporting centrally and part reporting to functional units.

In making a decision to outsource, companies with an effective, deceotralized organizational structure may want to farm out only a portion of their functions. They want to make sure their outsourcer retains the company's organizational structure so IS effectiveness does not suffer. Functional managers should retain control of system development of single-function applications and local-area network management so they can keep an eye on effectiveness and hosiness performance improvements.

Guiding corporate *funding* decisions

One way CEOs are responding to downturns in business is to mandate across-the-board budget cuts. But it's unwise to cut back on IS and services wholesale; doing so could impair business performance. The plain truth is that some areas just can't be cut. CIOs should know where technology is and isn't paying off and allocate money where it is going to have the greatest business impact.

To help their companies decide on funding, IS chiefs need measures in five areas: informatioo technology resources nsed, IS effectiveness, business efficiency, business effectiveness and quality.

Boston-based Nolan, Norton & Co.'s gray cell approach covers measurement in most of these areas. In this approach, operations first get ranked according to their impact on revenue and profits.

Second, the company measures and estimates the distributioo of technology resources across these operations.

Third, it estimates improvements from using information technology in each operation. For example, a manufacturtog company might give a high rank to investments in systems such as electronic data interchange beeause of their importance in achieving more flexible manufacturing.

The combinatioo of these three measurements shows where a company is using resources to support strategic or nonstrategic operations. In this way, the company can channel funds to where they will have the greatest impact.

Generally, this analysis reveals that companies have made investments to improve the efficiency of specific business activities.

Unfortunately, today's cost-accounting systems do not provide figures to show how these activities or processes have improved. Such information would go a long way in helping companies decide where to spend and where to cut back.

There is hope, however, in the shape of an emerging accounting system, known as activity-based cost management. Activity-based cost measures the cost of every significant activity in a process; therefore, it attaches value to such overlooked, yet important, activities as delays and rework. It also allocates overhead costs to specific products and services rather than spreading them across the board as a percentage of direct labor.

Activity-based cost management forces companies to understand their business processes and gives them a way to quantify such intangible benefits as higher quality and faster speed to market. In so doing, it provides executives with deep knowledge of the most valuable company processes so that they can decide which ones should receive the highest level of support.

Guiding *re-engineering* decisions

Re-engineering means redesigning business processes to make dramatic, companywide improvements in such areas as cycle time, quality and price.

Companies are beginning to take advantage of the power of computors by rethinking their assumptions about how businesses should work.

Unfortunately, few companies know how to measure information technology's impact on personnel productivity, customers and business performance after re-engineering; therefore, they are probably missing opportunities to improve their business processes further.

Measures that have the most meaning for re-engineering center on business efficiency and business effectiveness. Also important are IS effectiveness measures because management needs to know whether the IS department can deliver its promised services.

Boston University professor John C. Henderson and Northeastern University associate professor Kathleen Curley have developed the value assessment framework, which measures the value of IS in the business process arena.

Henderson and Curley say they believe the sources of value using information technology occur at three organizational levels: individual, division and corporate. Furthermore, they see the impact of an information technology investment in three areas: changes in economic performance, impact on key functions and changes in organizational processes. Most companies today do not incinde process change measorements; therefore, they do not really know the measurable impact of their information technology investments on business processes.

By combining their two views — organizational level and impact areas — the professors get a broad assessment of technology investments. This broad view describes benefits that narrower measurement techniques miss.

Henderson and Curley used their measurements to evaluate a human resources information system brought in at a large chemical company in New York. They looked at how the system affected the jobs of human resources counselors, the human resources function as a whole and the corporation's ability to manage its people.

What they found was that the system enabled individual counselors to concentrate on important and complex questions because employees could access the system directly for simple queries.

In terms of the human resources function, the system eliminated one process completely — medical claims verification. The claims are so accurate they can be sent directly to the insurer.

At the corporate level, the system has allowed the firm to restructure "intelligently," retaining the needed skills rather than simply making across-the-board cuts.

The key to getting measurable value from re-engineering is not to stop at process and technology changes. Rather, redesigning processes and systems must go hand in hand with rethinking jobs.

Peter Sassone, a professor at Georgia Tech University, conducted five years of in-depth interviews with 1,719 people in companies re-engineering their offices. He measured people's work before automation and then how their tasks were distributed afterward. What he found in some cases was astounding: Companies cut back on their clerks to save money. But any savings and benefits were diminished because high-paid employees took on the clerical tasks, even in some cases setting aside their planning and managing duties to do so.

Sassone says that only by taking detailed before-and-after measurements of work composition and then redesigning work force composition can companies reap re-engineering benefits. For some of Sassone's interviewees, those benefits include a 15% increase in productivity.

Guiding *quality* decisions

Companies have been measuring quality control for close to 70 years, but those efforts have generally not involved IS.

The current quality movement changes that. CIOs need to be involved in the measurement aspects of quality because information systems will be the tools used to gather, synthesize and communicate those quality measurements across departments. Measurement is a central ingredient in quality decisions, from the shop floor to the boardroom.

Much of the needed quality and performance data — such as product defects, number of customer complaints and number of returned products — is already in machine-readable form. Installed systems are collecting it. But the measurements are spread across departmental databases, so they present only pieces of the picture of how the firm is doing on quality.

CIOs have a tremendous task in front of them: creating a companywide view of quality data. Accomplishing this task will reap rewards for the business.

A quality measurement program requires linking measures in four areas: quality, business effectiveness, business efficiency and IS effectiveness. These measures range across a wide spectrum: quality improvement, customer satisfaction, cost of quality controls and the ability of the IS department to provide quality-tracking systems.

Systems departments need to create databases that link these disparate pieces of existing operational measures so they can be used for quality purposes. Once such links are available, departmental and corporate management can receive timely data on how well quality efforts are working. Furthermore, management can see the impact of its operating decisions on business performance from the standpoint of both costs and customer service.

Bases to cover for effective technology measurement

To help with your measurement efforts, you might want to keep in mind the following framework. It consists of business and technology areas to consider when assessing the value of information technology. Unfortunately, no measurement plan exists today that has all of these elements in it; IS chiefs will find themselves combining techniques and measures from various sources to touch all bases:

- ***Information technology resources used.*** **All measurement systems must begin with a statement of hardware, software, communications, data and people.**
- ***IS efficiency.*** **Typically, companies measure efficiency by cost and productivity, such as dollars, work-months per thousand lines of code and function points.**
- ***IS effectiveness.*** **Companies measure IS effectiveness in terms of responsiveness to new business requirements, breadth of system coverage of business processes and user satisfaction. Measurements in this category tend to come from user surveys.**
- ***Business efficiency.*** **Business efficiency is normally measured in terms of labor productivity and unit costs of products or services.**
- ***Business effectiveness.*** **Market share, customer satisfaction and time to market for new products and services are indicators of business effectiveness.**
- ***Quality management.*** **Errors in business processes and customer service, delays in problem correction and the level of IS commitment are measures of quality.**

Guiding *market* decisions

Exploiting a new product or service by entering a new market is one of the most challenging decisions management can make. Today's fast-moving pace requires companies to be flexible so they can react to new opportunities and to competitors more quickly. Such flexibility increasingly hinges on the firm's IS infrastructure.

However, infrastructure investments are difficult, if not impossible, to cost-justify because they provide no intrinsic return on investment.

Their purpose is solely to enable new ways of operating. The new operating modes provide the value; the infrastructure does not. So how can companies analyze and justify their infrastructure investments? How should they approach measurement?

One way is to use the financial options theory, espoused by New York University assistant professor Ajit Kambil, Boston University's Henderson and Hossein Mohsenzadeh in London.

An option (using the stock market definition) is a contract that gives the owner the right to buy or sell a specified amount of assets at a specified price on or by a specific date. A "call" option allows buying; a "put" option allows selling.

Information technology infrastructure investments can be seen as providing similar types of options. They can give management either the ability to create new applications not possible if the infrastructure is not in place (a call option) or the ability to replace existing applications quickly when they no longer meet needs (a put option).

An investment in electronic mail, for example, can be equated to a call option because it gives the company a way to create distributed systems more easily (using the mail system as the communications link). The new, distributed applications could conceivably be at customer sites — a possibility perhaps not economically feasible without the mail system infrastructure.

On the other hand, an investment in standards-based equipment could be equated to a put option because it enables management to abandon software from one vendor without also having to abandon the hardware.

By drawing on the numerous formulas and models used in financial options pricing, companies can more carefully estimate the future value of infrastructure investments. Companies will know when to build applications (call option) and when to abandon them (put option).

Companies without such measurement techniques are more likely to miss these put and call opportunities.

In the next few years, IS organizations will finally have measures to uncover the value of information technology in terms of business performance, thereby contributing to major corporate decisions. •

Carlson is a retired IBM corporate marketing consultant based in Boulder Creek, Calif. McNurlin is an independent writer in Torrance, Calif. The authors have spent the past four years researching the area of IS value measurement, and their findings appear in the report "Uncovering the information technology payoffs" ("I/S Analyzer," United Communications Group, Rockville, Md.)

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"Strategic management of information technology investments: An options perspective" by Ajit Kambil, John C. Henderson and Hossein Mohsenzadeh (MIT CISR Paper #222, March 1991).

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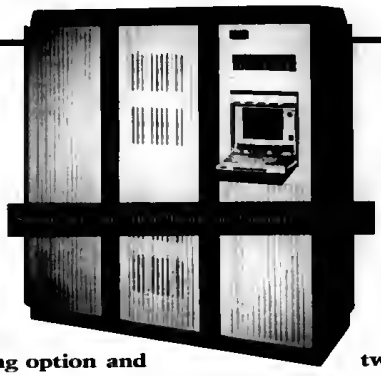

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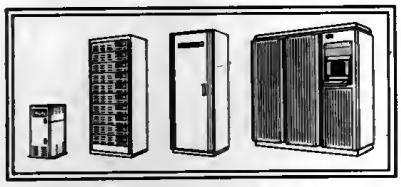

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Computer Careers

Your image could cost you your job

By Martin Morris

Are you scaring your users? You probably don't think of yourself this way, but for some users, information systems professionals are acronym-breathing monsters, threatening and unhelpful.

If you don't believe it, watch them the next time you answer a question or offer an opinion. They squint their eyes and start to focus on you. The muscles around their noses and mouths tighten up. They lean forward, not wanting to miss a word (even though they probably won't understand anything you say). After a few minutes, they put their pencils down and collapse mentally. They have just overdosed on computerese.

Later, as you describe this scene to your co-workers, they laugh and make uncomplimentary remarks about the user not understanding the system.

Wake up! You need to improve your image and clean up your act or you can expect to become obsolete.

Users' jobs were here long before mainframe, peripherals and magnetic tape became household words. Their jobs will *still* be here after local-area networks, image processing, fourth-generation languages and other products have come and gone.

We owe ourselves the chance to see beyond our technical limitations. We owe our users the same energy we expended learning that first programming language or operating system. Only now, we need to focus on learning what their business needs are all about. We've had blinders on for too long. It's time to take them off.

Grim alternative

We need to shift our thought processes from thinking our skills will always be in demand to thinking that our skills and the *image* we present to the company need to be upgraded daily. The alternative is becoming obsolete or being dismissed.

Image improvement outside your technical speciality isn't difficult. The best place to start is in your user community. For instance, ask a user to explain how a complex report, produced by a system you maintain, is used in the company operations. *Don't* tell him which job produced the report, how many files it took to compile the report or how many gyrations the computer operations department went through to align the special report forms. Leave that information back at your desk. Have the user explain the report's function in business terms. If you do, you'll make a friend for life.

I first learned of the value of approaching users in this way in the mid-'70s, when I was a programmer/analyst at a bank. I was frustrated with never seeing the results of my work. So I asked users to show me how my work affected their jobs. By running test calculations, I was able to see the effects I could have on the user. This opened a major channel of communication: It made the users feel better to know I understood the impact my work could have on theirs, and it helped me to gain a new appreciation for users' work.

> **Wake up! You need to improve your image or risk becoming obsolete.**

Another way you can show your willingness to improve your relationship with users is to ask them to set aside a few mornings to teach you about their departments and how they do their jobs. You'll be amazed at how the smallest effort will improve the relationship you have with the user community. Chances are you'll be able to spot areas where small procedural changes could result in significant time and money savings for the company.

In users' shoes

I had an educational experience in the early '80s as a first-line supervisor working with financial assistance programs administered by state governments. I went to a user site and had people take me through the same process through which they take applicants for assistance. They used a test system and together we created what-if scenarios.

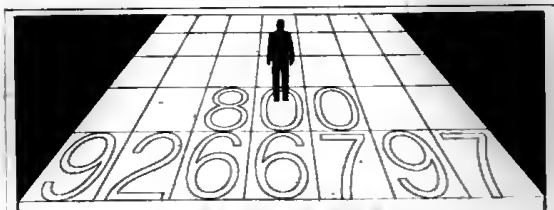
Once I knew the procedure from both sides, I found myself becoming an arbitrator — understanding the concerns of the JCL-type and the concerns of the end user who has to look across the desk at a person who needs financial assistance.

Even today, as a supervisor of IS professionals, I continue to see a tremendous payback when a programming technician spends quality time with users discussing their needs.

Today, I'm trying to use what I've learned to help my colleagues, and I try not to preach. Rather, I set up the scenario and let them come up with solutions. I use many analogies and try to bleed out the computerese. I try to equate situations at hand with things they deal with in everyday life.

The impression you make on users begins the first time you meet them and is reinforced each time you encounter them. Developing a positive image takes a lot longer than making a bad impression. Improving your image is as important as improving your technical skills.

Morris is an assistant vice president at AmSouth Bank in Birmingham, Ala.



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Industry currents

Tourism driven by integrated technologies

By Emily Leinfuss

Resort destinations and theme parks hold the most promise for information systems jobs in the tourism industry, as jobs in this area heavily involve integrating different technologies.

In fact, technology is the thread that binds tourist attractions together. It is all-pervasive — video surveillance in parking lots, automatic ticket counting at the front gate and a world of animated visions and mechanized attractions.

This reliance on technology translates into some fruitful job opportunities in IS, although employment in other segments of the tourism industry, such as rental car agencies and motels, is not experiencing much growth.

Keeping guests happy

Competition for visitors is fierce at tourist attractions such as theme parks. With a recessionary economy, people take fewer vacations and are far more selective about where they visit. These attractions look to technology to make a difference.

"Technology in our environment has a direct impact on guest experience," says James Bell, director of IS at Colonial Williamsburg Foundation in Williamsburg, Va. Implementing touch-screen ticketing machines and improving ticketing systems can help lines move faster or disappear completely.

Bell says that his company is now hiring for these kinds of projects, but he is very selective. He looks for business-oriented people who can translate strategic objectives into systems running on either midrange or client/server technologies.

"We push our staff toward consultant or analyst roles — people who use fourth-generation languages and tools such as CASE to create solutions at a higher level," Bell says.

Busch Entertainment Information Systems in St. Louis runs nine parks, including Sea World of Florida in Orlando, Fla., and Busch Gardens in Tampa, Fla. Each park is independent as far as revenue generation, but data collection and financial systems are handled collectively at corporate headquarters.

John Merritt, manager of computer engineering services at Busch's headquarters, says there are many jobs available at Busch and at theme parks in general. Busch conducted a survey with other theme parks and found the majority of systems — both hardware and software — are put together in-house.

"This creates jobs that range from IS programming to documentation writers to installers of equipment," Merritt says.

Like the other theme parks it surveyed, Busch does most of its own internal development work and needs systems programmers. The company also needs IS people at the local level — from data processing managers to network administrators, he says.

Future is Unix

Rental car agencies are still managing to hold their own as tourists continue to look for economical means of transportation. Unix is the technology of the future at car rental agencies and some motel chains as these companies move to a client/server, open systems strategy.

> A reliance on technology translates into fruitful IS job opportunities in tourism

"The job demand is for people who have a background in Unix as well as DOS and LANs," says Scott Gross. As director of MIS at Welcome Corp., which owns Thrifty Car Rental in Alexandria, Va., he runs 17 area offices single-handedly.

Using technology to boost service is also a key concern at rental car agencies. Companies that are doing well, such as Alamo Rent-A-Car, Inc., offer opportunities in a number of areas including the mainframe environment for large transaction processing, the PC world and Unix.

Demand for Unix talent is on the rise, although right now, demand in the Cobol/CICS mainframe environment is still highest and will continue to be for a couple of years, says Thomas Loane, vice president of computer services at Alamo.

The job market is not as bright at motel chains: They were hit by the slowdown in the hospitality industry that started in the late 1980s. And because fewer tourists are choosing to travel to resort destinations, there just aren't enough people to fill all of the available rooms.

Downsizing or rightsizing has hit the motel industry, and jobs are starting to grow scarce, especially at economy chains. "There are not as many jobs as there used to be," says Sam Peace, vice president of IS at La-Quinta Motor Inns, Inc. in San Antonio, Texas.

But Peace says talented people are always in demand, especially those with a background in creative problem-solving in programming.

IS professionals with property management experience are also in demand, says Robert Long, vice president of IS at Motel 6 in Dallas.

Long says that in general, the motel industry is moving toward local-area network-based technology; Unix, 4GLs, relational databases and computer-aided software engineering tools.

Specialty technologies — multimedia for marketing purposes and pen-based computers for check-in — are also becoming more prevalent. These technologies can translate into jobs for people with the right skills to address them.

Leinfuss is a free-lance writer based in Sarasota, Fla.

At a glance

Best opportunities: Tourist-based economies, such as Florida, California and Washington, D.C.

Salaries: $35,000 to $50,000 with three to five years' experience in jobs such as applications consultant, system programmer and programmer analyst.

Hot job titles: Consultant or network operating systems support analyst.

Required skills: Car rental agencies see a demand for communications specialists and C++ programmers with DOS and OS/2 experience. Motels are looking for a select few with skills in implementing specialized technologies such as multimedia and pen-based systems. Theme parks need problem solvers because so much of their job includes integrating different technologies.

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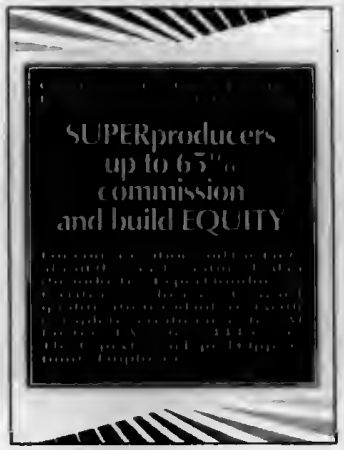

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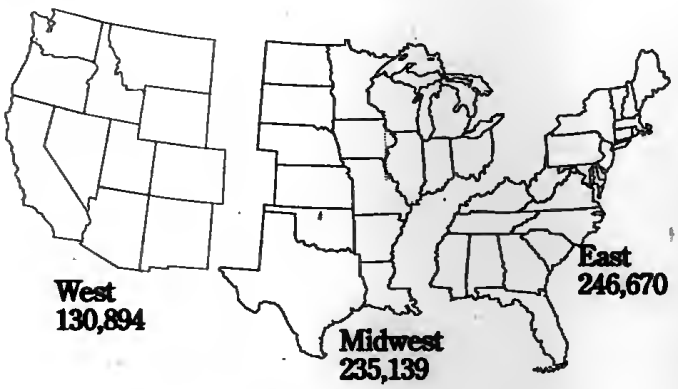

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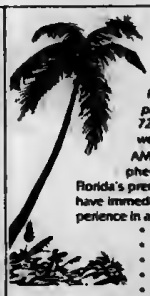

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When the SPA comes a-knockin'

playing it SAFE

By Joel Gilman

Every day, the Software Publishers Association (SPA) receives between 20 and 30 calls on its antipiracy hot line. Every day, it conducts two new audits, which are successful most of the time. Last year, it collected $3 million in fines.

While your company probably doesn't condone using pirated software, your employees could be using programs you don't know about. Either way, you will want to know what to expect when the SPA comes knocking on your door.

Most often, the Washington, D.C.-based organization gets a tip from a disgruntled former or current employee that a company is using unauthorized software.

Tip verification

Before acting on a tip, the SPA tries to verify it in a number of ways. It looks at the registration records the company has on file with the software publisher. If the tip indicates that the company has significantly more copies than the publisher has licensed to it, the SPA will investigate.

> Last year's SPA audits resulted in fines ranging from $500 to $498,000. The latter was from a company that had illegally copied 150 products published by 66 SPA members.

The investigation starts with a letter to the company, requesting its cooperation in conducting an audit.

When a company gets this letter, it can agree to the audit, which is entirely voluntary, or ignore it. However, the best thing to do is cooperate. It will cost less, the case will be resolved faster, and there won't be any adverse publicity.

"Ninety-five percent of the companies audited cooperate fully," says Ken Wasch, executive director of the SPA. Those that don't can expect the SPA to file a suit and show up with a federal marshal and a search warrant. "You'll end up in court. It will cost you more, take longer to resolve, and you risk bad press," Wasch says.

While waiting to be audited, don't be tempted to erase programs. The SPA uses Symantec/Peter Norton Computing Group's Norton Utilities and other tools to reconstruct deleted programs. "We are also acting on an inside tip, so we probably know more about where to look than you do," Wasch says.

The SPA looks only for software published by its members (of which there are more than 1,000), and it is interested only in end-user copying. For example, it won't conduct an audit of an OEM that sublicenses a member's product to end users.

If the SPA finds illegal software during the audit, you pay for it twice: It charges you a fine equal to the price of the product and then destroys the copy. If you wish to continue using the software, you must purchase a legitimate copy.

If you don't cooperate and illegal copies are found, the SPA pursues full legal remedies for copyright infringement, which can be far more costly than merely paying double. The U.S. Copyright Act provides for statutory damages of up to $100,000 for willfully copying software.

Gilman is a Seattle-based attorney who practices computer law.

Excuses that don't work

Ken Wasch, executive director of the SPA, has heard a lot of excuses from companies that have been turned in by tipsters. He highlights two of the most common ones:

We have a policy against copying software; we sent out a memo.
A circulated memo, used as evidence in court, will not forestall a finding that the company's conduct was willful.

Software copying is hard to manage; we just lost control.
This may be true, but Wasch argues that the SPA has a variety of educational tools and internal auditing guides to help managers prevent their organizations from getting a call from the SPA. For more information on these products, contact the SPA at (202) 452-1600.

How to call in a tip

What happens when you call the SPA antipiracy hot line? To find out, I called the hot line at (800) 388-7478, which is answered during normal business hours. The operator asks enough questions about your tip to determine how likely it is that a problem exists.

With only two hot line operators handling 20 to 30 calls per day, it is not uncommon to get a voice recording even during normal business hours.

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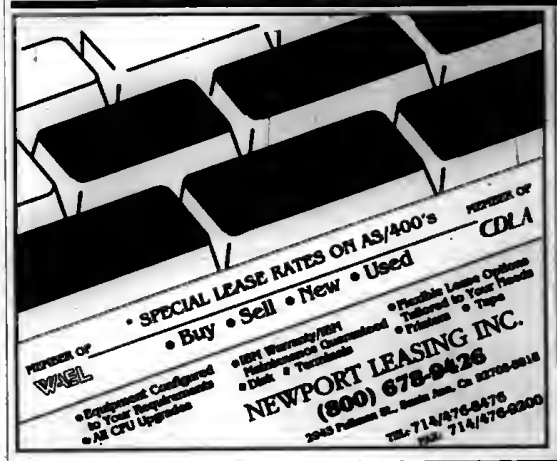

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Portable III	$500	$425
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LTE-286	$800	$725
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Vendors may bid on either or both of the two systems to be developed.

Upon completion of the requirements and functional design, the department may construct part or all of the systems either by using its own resources, or by entering into a contract with the vendor that provided the requirements and functional design, or with another vendor.

Completion date of system requirements and functional design of the two systems is June 15, 1993. The construction completion date is January 1, 1994.

RFP's are available from Gary Friesen, Migration Project, Oregon Department of Revenue, 955 Center St. NE, Salem, OR 97310. Phone (503) 378-4000. Proposals must be received by December 24.

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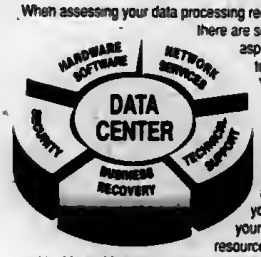

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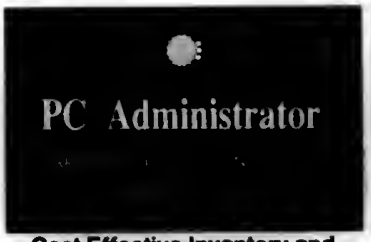

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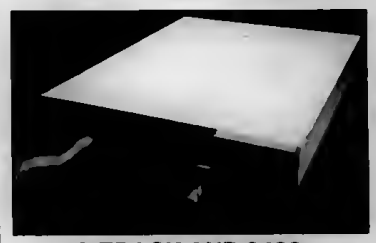

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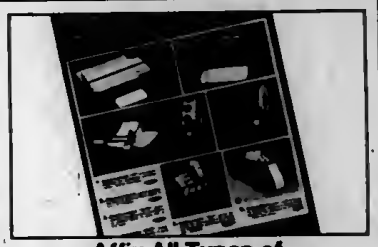

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Gainers Losers

Percent

Gainers		Losers	
Microcom Inc.	44.1	Komag Inc. (H)	-19.8
Artel Communication Corp.	35.5	Ultimate Corp	-17.6
Ross Systems	33.9	Bachman Info. Systems	-32.0
Intelligent Electronics	32.8	Spinnaker Software	-15.4
Phoenix Technologies	31.7	Everex Systems Inc.	-14.3
Kendall Square Research	31.6	Iomega Corp	-11.3
Group 1 Software	28.0	Platinum Technology	-10.8
Computer Horizons	21.9	Hogan Systems Inc.	-10.6

Dollar

Gainers		Losers	
Intel Corp. (H)	8.63	Komag Inc. (H)	-4.50
Synoptics Communications	5.75	Platinum Technology	-2.38
BMC Software Inc.	5.13	System Software Assoc. (H)	-2.25
Matsushita Electronics	4.75	FileNet Corp.	-2.25
Micro Focus (H)	4.38	BGS Systems Inc. (H)	-2.00
Data Race Inc. (H)	4.00	Sprint Corp. (H)	-1.63
Motorola Inc. (H)	3.75	KnowledgeWare Inc.	-1.50
Group 1 Software	3.50	Chipcom Corp.	-1.50

[redacted]

Christmas stocking

With only 17 more shopping days left before Christmas, analysts pointed out several Wall Street offerings that may make good buys for the holiday season:

Advanced Micro Devices, Inc. (AMD)

Microchip maker AMD's share price took a hit at the end of last week as a federal judge's ruling set the company back in its efforts to enter the Intel Corp. i486 clone market (see story page 15). Nonetheless, analyst Mark Edelstone at Prudential Securities, Inc. rated AMD stock a Buy in the wake of the legal decision. Edelstone said he expects AMD to release a 486 processor with its own microcode by the second quarter of next year. The drop in stock price represents a buying opportunity rather than a cause for concern, Edelstone said.

New York Stock Exchange trading of AMD closed Thursday at 16¾.

Hewlett-Packard Co. (HWP)

Effective expense-control efforts and strong quarterly orders earned HP a Buy rating from analyst Shao Wang at Smith Barney, Harris Upham & Co., in spite of HP's disappointing fourth-quarter results. Wang said HP offers a superior product line, and demand for high-margin items, including testing and medical equipment, is on the rise.

HP closed Thursday at 63¾ on the New York Stock Exchange.

Sterling Software, Inc. (SSW)

Securities firm The Chicago Corp. said it anticipates steady long-term growth for Sterling Software. Analyst Robert Johnson set a target price of about 30 as Sterling Software continues to succeed in its electronic data interchange, systems software and federal systems groups.

The company has a large base of recurring revenue stemming from long-term government contracts and systems software maintenance fees, Johnson said.

The company's shares stood at 21½ on the New York Stock Exchange Thursday.

Intersolv, Inc. (ISLI)

Alex. Brown & Sons, Inc. rated Intersolv a Buy in a Nov. 19 report. Analysts Christopher Mortenson and Laurence Fong said Intersolv's flagship Excelerator development tool has suffered disappointing sales, but Excelerator upgrades and the success of other products, such as the APS code generator, will spur strong growth in the near term.

Intersolv closed at 13½ on NASDAQ Thursday.

—Derek Slater

[redacted]

Exch	52 Week	Range		Dec 4 3 pm	Wk Net Change	Wk Pct Change
Communications and Network Services						**Up 3.1%**
OTC	24.63	9.63	3COM Corp	24.63	2.25	10.1
NYS	70.63	56.25	American Info Techs Corp	67.63	-0.13	-0.2
NYS	67.88	36.63	AT&T (H)	47.38	-0.38	-0.8
OTC	4.25	0.75	Artel Communication Corp	1.31	0.34	35.5
OTC	22.00	10.25	Banyan Systems Inc	20.75	-0.25	-1.2
NYS	49.75	40.25	Bell Atlantic Corp	47.75	0.00	0.0
NYS	55.50	43.38	BellSouth Corp	49.00	0.25	0.5
NYS	6.75	3.63	Bolt Beranek & Newman	4.88	-0.25	-4.9
NYS	75.38	42.13	Cabletron Systems (H)	74.38	1.75	2.4
OTC	31.00	17.75	Chipcom Corp	26.00	-1.50	5.5
OTC	76.50	26.50	Cisco Systems Inc. (H)	73.75	1.00	1.3
OTC	35.25	5.50	Compression Labs Inc.	14.25	0.25	1.8
OTC	3.38	0.88	Data Switch Corp	2.44	0.06	2.7
NYS	23.63	13.75	Digital Comm Assoc	17.00	0.25	1.5
OTC	15.25	7.50	Digital Systems Int'l Inc	11.00	-1.00	-8.3
OTC	20.13	3.63	DSC Communications (H)	19.75	0.50	2.6
OTC	10.88	4.75	Fibronics Int'l Inc	7.25	1.00	16.0
OTC	37.50	10.50	FileNet Corp	21.00	-2.25	-9.7
OTC	3.38	1.50	Gandalf Technologies Inc.	1.88	0.13	2.3
OTC	2.25	0.69	Gateway Communications	3.56	0.25	19.0
NYS	5.50	2.50	General DataComm Inds	5.50	0.75	15.8
ASE	5.88	1.00	Go Video	3.00	-0.25	-7.7
NYS	35.75	28.88	GTE Corp	33.50	0.63	3.8
NYS	71.75	50.00	ITT Corp (H)	71.75	0.88	3.2
OTC	38.50	26.75	MCI Communications Corp (H)	38.38	0.00	0.0
OTC	14.25	2.25	Microcom Inc	6.13	1.88	44.1
NYS	18.25	9.50	Network Equipment Tech	9.63	-0.25	-2.5
OTC	25.50	8.00	Network General	17.50	0.38	2.2
OTC	20.00	8.50	Network Systems Corp	16.00	-0.88	-5.9
OTC	31.50	5.88	Newbridge Networks Corp (H)	31.50	1.00	3.3
NYS	49.25	30.50	Northern Telecom Ltd	42.25	0.75	1.8
OTC	33.50	22.50	Novell Inc.	31.38	0.25	-0.8
NYS	88.38	69.13	Nynex Corp	83.25	0.75	0.9
OTC	37.50	14.50	Octel Communications Corp.	22.50	0.50	2.2
OTC	9.88	3.38	Penril DataComm Ntwks.	4.25	-0.13	-2.9
OTC	53.00	10.25	PictureTel Corp	25.00	-0.25	-1.0
OTC	18.75	7.00	Proteon Inc	10.63	0.63	6.3
NYS	38.00	14.13	Scientific Atlanta Inc (H)	38.00	1.25	3.4
NYS	70.88	56.63	Southwestern Bell Corp (H)	70.25	-0.13	-0.2
NYS	26.75	20.75	Sprint Corp (H)	24.75	-1.63	-6.2
OTC	24.63	5.25	Standard Microsystems Corp (H)	24.63	3.38	35.9
OTC	70.25	15.25	SynOptics Communications	70.25	5.75	8.9
NYS	40.00	32.88	U S West Inc	38.13	0.88	2.3
OTC	70.25	24.00	Wellfleet Communications (H)	70.25	2.25	3.3
PCs and Workstations						**Up 4.6%**
OTC	10.25	3.50	Advanced Logic Research	4.50	0.00	0.0
OTC	70.00	41.50	Apple Computer Inc	57.50	1.00	1.8
OTC	24.50	11.25	AST Research Inc	20.75	0.75	3.8
NYS	19.25	6.75	Commodore Int'l	8.75	1.50	20.7
NYS	43.13	22.25	Compaq Computer Corp.	42.50	1.63	4.0
OTC	39.25	15.00	Dell Computer Corp	36.75	0.50	1.6
OTC	7.75	0.88	Everex Systems Inc.	1.13	-0.19	-16.3
NYS	35.38	21.25	Harris Corp (H)	34.00	-0.63	1.8
NYS	85.00	47.63	Hewlett Packard Co.	64.63	1.25	2.0
NYS	29.75	14.13	Silicon Graphics	27.50	1.63	6.3
OTC	36.13	20.75	Sun Microsystems Inc.	34.00	3.13	10.1
NYS	31.25	22.25	Tandy Corp	30.88	1.75	6.0
NYS	13.13	5.00	Zenith Electronics	6.63	0.63	10.6
OTC	25.50	2.75	Zeos International Ltd.	4.00	0.63	18.5
Large Systems						**Up [illegible]**
ASE	20.63	6.63	Amdahl Corp (L)	7.38	0.63	7.8
NYS	16.38	4.75	Convex Computer	7.63	0.38	5.2
OTC	14.25	1.88	Cray Computer	4.75	0.13	2.7
NYS	49.50	19.00	Cray Research Inc.	23.88	0.38	1.6
NYS	18.13	7.13	Data General Corp	12.13	1.13	10.2
NYS	65.50	31.50	Digital Equipment Corp (L)	33.38	1.75	5.5
NYS	100.38	60.88	IBM (L)	67.00	1.50	2.3
OTC	13.25	5.50	Kendall Square Research	13.00	3.13	31.6
NYS	119.25	83.00	Matsushita Electronics	91.75	4.75	5.5
OTC	17.50	6.00	Pyramid Technology	9.25	1.00	9.8
OTC	17.88	10.38	Sequent Computer Sys	15.13	0.63	4.3
OTC	18.38	2.75	Sequoia Systems Inc	3.50	0.00	0.0
NYS	54.25	29.50	Stratus Computer Inc	34.50	1.50	4.5
NYS	15.13	9.50	Tandem Computers Inc	14.63	0.63	4.5
NYS	11.75	4.00	Unisys Corp	10.25	1.63	16.8
ASE	7.50	0.06	Wang Labs Inc. (B) (L)	0.46	0.00	0.0
Software						**Up 4.1%**
OTC	68.50	25.25	Adobe Systems Inc	33.50	-0.13	0.4
OTC	44.25	10.25	Aldus Corp	15.25	-0.25	-1.6
OTC	19.75	7.00	American Software Inc	9.25	0.50	5.7
OTC	20.75	9.75	Ask Computer Systems	20.75	3.50	20.3
OTC	56.50	23.25	Autodesk Inc	50.00	1.50	3.3
OTC	37.75	3.75	Bachman Info. Systems	5.50	-1.13	-17.0
OTC	43.00	32.00	BGS Systems Inc (H)	41.00	2.00	-4.7
OTC	79.00	37.25	BMC Software Inc	68.25	5.13	8.1
OTC	25.50	13.00	Boole & Babbage	22.25	1.50	7.2
OTC	86.75	21.50	Borland Int'l Inc (L)	24.75	0.50	2.3
OTC	10.50	3.63	CE Software	4.13	-0.13	-2.9
ASE	29.75	9.38	Cheyenne Software Inc.	27.25	0.50	1.9
OTC	11.13	5.63	Cognos Inc	7.50	0.25	3.4
NYS	19.50	8.63	Computer Associates	19.00	0.75	4.3
NYS	12.38	4.75	Computervision Corp	4.88	-0.38	-2.1
OTC	20.00	6.75	Comshare Inc	14.00	1.13	8.7
OTC	47.88	6.00	Easel Corp	12.75	1.00	8.5
OTC	25.00	11.50	Group 1 Software	16.00	3.50	28.0
OTC	6.63	3.50	Hogan Systems Inc	5.88	-0.63	-10.6
OTC	36.25	18.50	Information Resources	33.50	2.75	8.8
OTC	33.50	5.88	Informix Corp	31.88	0.25	0.8
OTC	22.38	11.00	Intergraph Corp	13.25	0.38	2.9
OTC	15.00	7.00	Interleaf Inc	12.00	-1.25	9.4
OTC	20.25	10.25	Intersolv Inc.	13.50	-1.00	-6.8
OTC	21.38	9.50	KnowledgeWare Inc	13.50	1.50	10.0
OTC	50.75	28.75	Legent Corp	50.75	0.88	1.8
OTC	38.75	14.75	Lotus Development	22.50	1.50	7.1
OTC	7.38	1.88	MECA Software	4.00	0.00	0.0
OTC	22.25	5.25	Mentor Graphics	8.63	0.63	7.8
OTC	62.13	27.25	Micro Focus (H)	62.13	4.38	31.6
OTC	20.50	6.50	Micrografx Inc	9.25	0.75	8.8
OTC	95.00	65.50	Microsoft Corp.	92.00	3.50	1.7
OTC	24.75	12.00	Oracle Corp	22.88	2.25	10.9
OTC	56.25	23.38	Parametric Technology	52.00	-0.25	-0.5
OTC	11.00	3.50	Phoenix Technologies	6.75	1.63	31.7
OTC	25.25	11.25	Platinum Technology	19.63	-2.38	-10.8
OTC	60.00	29.00	Progress Software Corp. (H)	58.25	-0.75	-1.3
OTC	26.63	4.00	Quarterdeck Office Sys.	6.25	0.88	16.3
OTC	32.75	31.75	Rainbow Technologies Inc.	26.50	2.38	10.7
OTC	22.75	4.00	RasterOps	8.50	0.88	11.5
OTC	17.25	3.63	Ross Systems	9.88	2.50	33.9
OTC	18.88	8.50	Sapiens USA Inc. (H)	32.75	-0.75	-4.1
OTC	26.25	6.75	Software Publishing Corp	9.50	0.75	8.6
OTC	8.00	2.00	Software Toolworks Inc.	5.75	0.00	0.0
OTC	7.25	0.75	Spinnaker Software	1.38	-0.25	15.4
OTC	16.50	3.25	State of the Art	7.25	0.75	11.5
NYS	25.25	13.75	Sterling Software Inc	21.50	0.63	3.0
OTC	30.88	8.00	Struct. Dynamics Research	32.88	0.50	4.2
OTC	45.25	16.75	Sybase Inc.	42.75	-0.50	-1.2
OTC	51.00	5.88	Symantec Corp.	33.88	2.00	10.8
NYS	15.50	5.25	Systems Center Inc.	7.33	-0.38	-5.0
OTC	37.50	16.66	System Software Assoc. (H)	35.25	2.25	-6.0
OTC	33.25	2.50	Trinzic Corp.	3.75	0.25	2.1
OTC	23.75	14.50	Walker Interactive Systems	21.75	0.78	3.8
OTC	5.38	1.38	WordStar	2.44	0.38	18.2
Semiconductors						**Up [illegible]**
NYS	21.50	7.38	Advanced Micro Devices	16.75	-0.88	5.0
NYS	14.63	2.50	Analog Devices Inc (H)	14.63	1.00	7.3
OTC	16.25	6.75	Atmel Corp. (H)	15.88	0.88	5.8
OTC	14.13	3.25	Chips and Technologies	4.88	0.00	0.0
NYS	48.38	7.38	Cypress Semiconductor Corp	10.88	0.13	1.2
NYS	16.50	6.75	Dallas Semiconductor (H)	14.25	0.50	3.6
OTC	78.63	41.25	Intel Corp. (H)	78.63	8.63	12.3
NYS	30.38	4.88	LSI Logic Corp. (H)	10.38	3.38	35.3
NYS	22.38	12.13	Micron Technology	19.38	0.25	1.3
NYS	104.38	58.00	Motorola Inc. (H)	103.50	3.75	3.8
NYS	16.13	5.38	National Semiconductor	13.00	0.25	2.0
OTC	27.00	8.25	Sierra Semiconductor	15.00	0.75	5.3
NYS	52.25	26.00	Texas Instruments	49.25	1.25	2.6
OTC	10.50	6.00	VLSI Technology	7.13	-0.13	-1.7
OTC	7.00	2.13	Weitek	5.25	0.00	0.0
ASE	8.00	2.00	Western Digital Corp.	7.75	0.25	3.3
OTC	31.00	14.50	Xilinx	21.00	0.00	0.0
OTC	33.50	15.50	Zilog Inc.	31.75	1.00	3.3
Peripherals and Subsystems						**Up 4.1%**
OTC	11.25	3.88	Archive Corp	11.13	0.00	0.0
OTC	28.50	13.75	BancTec Inc. (H)	28.50	2.75	10.7
OTC	23.50	9.25	Cambex Corp.	16.00	-1.00	-5.9
ASE	35.25	5.66	Cognitronics Corp (H)	15.13	0.00	0.0
NYS	23.88	13.00	Conner Peripherals	20.88	1.75	9.2
OTC	26.75	14.25	Data Race Inc (H)	25.88	4.00	18.3
ASE	19.66	4.75	Dataram Corp	11.00	-0.38	3.3
NYS	22.25	6.09	EMC Corp	22.25	2.00	9.9
OTC	18.00	4.75	Emulex Corp. (H)	8.63	-0.13	1.4
OTC	23.00	13.25	Evans & Sutherland	18.00	0.75	4.3
OTC	40.63	12.00	Exabyte	15.75	-0.25	-1.3
OTC	38.00	15.75	Intelligent Info. Systems (H)	37.50	1.00	2.7
OTC	11.25	4.75	Iomega Corp	6.88	-0.88	-11.3
OTC	34.75	10.25	IPL Systems Inc.	13.25	1.25	10.4
OTC	23.25	30.75	Komag Inc. (H)	18.25	-4.50	-19.8
OTC	19.88	4.38	Maxtor Corp. (H)	18.88	1.00	5.6
OTC	12.63	7.13	Micropolis Corp	9.88	0.88	9.7
NYS	107.00	85.38	3M Corp	101.38	-3.33	-1.1
OTC	6.75	3.50	Printronix Inc.	5.00	0.25	5.3
NYS	35.50	6.88	QMS Inc.	10.63	1.88	21.6
OTC	18.00	9.00	Quantum Corp.	16.75	1.88	12.6
OTC	12.75	3.75	Radius Inc	6.25	-0.63	-9.1
NYS	14.88	7.50	Recognition Equipment	14.88	1.63	12.7
OTC	33.88	5.63	Rexon Inc.	12.75	1.25	10.9
OTC	21.63	7.75	Seagate Technology (H)	21.63	2.75	16.6
NYS	78.00	20.00	Storage Technology (L)	23.00	2.63	12.9
NYS	22.88	16.50	Tektronix Inc.	19.88	-0.88	-1.9
NYS	82.25	60.88	Xerox Corp	78.13	-0.13	-0.2
Services						**Up 4.0%**
OTC	23.38	12.16	American Mgmt. Systems (H)	20.75	-0.13	0.5
NYS	5.88	3.00	Anacomp Inc.	4.19	0.38	10.0
OTC	22.75	12.50	Analysts Int'l (H)	22.75	1.50	7.3
NYS	52.88	37.00	Auto Data Processing (H)	52.50	1.25	2.4
NYS	17.25	7.06	Ceridian Corp	15.88	0.88	5.8
NYS	23.22	12.50	Comdisco Inc.	15.13	-0.50	-3.2
OTC	13.50	6.75	Computer Horizons	9.75	1.75	21.9
NYS	84.88	57.00	Computer Sciences	76.75	-1.25	1.6
NYS	10.13	7.00	Computer Task Group	8.88	0.25	2.9
OTC	40.50	15.00	CompUSA Inc	34.25	-1.00	2.8
OTC	19.25	6.00	Corporate Software	11.00	0.00	0.0
OTC	30.75	7.75	Egghead Discount Software	11.25	1.00	9.8
NYS	33.50	25.25	General Motors E (EDS) (H)	33.00	0.75	2.3
OTC	30.38	6.25	Intelligent Electronics	11.63	2.88	32.8
OTC	14.88	6.63	Merisel	10.25	-0.38	-3.5
OTC	15.75	5.75	Microage Inc	8.88	1.38	18.3
OTC	40.00	18.34	Paychex	38.50	-0.25	-0.6
NYS	81.25	55.00	Policy Management Sys. (H)	79.25	1.50	3.9
NYS	51.13	31.88	Reynolds and Reynolds (H)	50.38	-0.25	0.5
OTC	32.00	22.00	SEI Corp	29.00	1.25	4.5
OTC	24.88	16.88	Shared Medical Systems	22.25	0.38	3.7
OTC	88.00	16.00	SunGard Data Systems	28.25	0.00	0.0
NYS	3.63	1.13	Ultimate Corp	1.75	-0.38	-37.6

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

Dell makes offering

Dell Computer Corp. plans to go ahead with a $148 million, 4 million share secondary stock offering despite the brouhaha following allegations that the Austin, Texas, PC vendor masked losses from foreign currency hedging [CW, Nov. 30].

Iomega pessimistic

Iomega Corp. last week said it expects fourth-quarter earnings to be substantially lower than 1991's comparable period. While revenue rose during the last two months, higher operating expenses and lower margins cut deeply into profits, the Roy, Utah, mass storage vendor noted.

Edify raises funds

Software start-up **Edify Corp.** in Santa Clara, Calif., has raised $8 million in its third round of financing. The developer of customer service software has now raised $16.8 million. New investors include **InterWest Partners** in Menlo Park, Calif., and **Tiger Management Corp.** in New York. They join investors **Sutter Hill Ventures, Technology Venture Investors** and **Highland Capital Partners.**

Alsys buys Telesoft

Ada software developer **Alsys** has agreed to buy technical computer-aided software engineering and services vendor **Telesoft** in a deal that will create a $40 million company. The combined company will be known as the Alsys Group and will be based in Burlington, Mass.

Yeutter lands at TI

Clayton Yuetter, a former U.S. trade representative, has joined the board of **Texas Instruments, Inc.** Yuetter's appointment raises the number of directors on TI's board to 15.

D&B Software to cut staff by 13%

By Melinda-Carol Ballou
ATLANTA

Dun & Bradstreet Software disclosed last week that its yearlong consolidation process will continue throughout next year, as the company plans to reduce its head count by 400 employees — or 13% of its work force — during 1993.

Earlier this year, the company closed down its Eagan, Minn., facility. The next round of cuts will encompass the closing of a Huntsville, Ala., facility by June 1993. A company spokesman said host-based human resources products produced in Huntsville will be moved to the company's Atlanta offices.

Of the 400 employees to be laid off, 250 will come from the company's U.S. offices. Hardest hit will be sales and administration groups, company officials said.

Some industry analysts and users said D&B Software's ongoing streamlining will strengthen the company as it pushes beyond its IBM mainframe and VAX/VMS roots into uncharted client/server waters.

"We feel that they want to focus resources on the next generation of software and are cutting around the edges to do that," said Jennifer Scholz, a software analyst at International Data Corp., a market research firm based in Framingham, Mass.

The user base is divided over D&B Software's new direction, according to Les Palmer, former co-chairman of the D&B Software user group who is also property accounting manager at Hallmark Cards, Inc. in Kansas City, Mo. "While a lot of people were excited about it, others were concerned about how fast this technology is going to move forward and about continuing support for the existing line. I think D&B has done their best to reassure users about that."

Hallmark is undeterred by the company's ongoing reorganization. "I have only good things to say about doing business with D&B," Palmer said.

The company, however, rejected D&B Software's client/server software in favor of local-area network-based financial packages from Comshare, Inc. Hallmark will keep a D&B Software fixed-asset package.

Full client/server versions of those products are not expected to be fully rolled out for 12 to 18 months. Some pieces are available, including graphical user interface front ends to existing applications.

Scholz said the D&B Software installed base is likely to wait. The company, she said, faces little competition because "many other companies don't have the [client/server] solutions yet or are just getting them out."

While the company tries to cajole that stationary group, a diverse group of client/server competitors is gunning for the same action.

PeopleSoft, Inc., Tesseract and Oracle Corp., among others, have announced client/server applications that rival D&B Software's offerings.

In the works
Already available is Smartstream, a Windows-based product that can access information on a range of databases. By midyear the firm expects to release client/server versions of financial applications, with human resources, logistics and manufacturing to follow.

Dun & Bradstreet Software is cutting its head count to keep expenses in line with lower revenue

Revenue (software segment)		Approximate year-end head count	
1990	$539	1990	3,600
1991	$549	1991	3,300
1992*	$527	1992*	2,900
Revenue in millions		1993*	2,600

*Projected

CW Chart: Michael Siggins

Allies to relax curbs on exports to Eastern bloc

By Gary H. Anthes
WASHINGTON, D.C.

The sudden end of the Cold War may have done more to loosen controls on the export of U.S. computers than years of work by dozens of industry lobbyists.

In the recent inaugural meeting of the Cocom Cooperation Forum on Export Controls in Paris, the U.S. and 16 allies told the former Soviet republics that they would significantly ease restrictions on exports of advanced computers and telecommunications equipment in exchange for assurances that the goods would be used solely for peaceful purposes and would not be diverted to countries such as Iraq, Iran, North Korea and China, which might use them to build weapons of mass destruction.

The 17 members of Cocom (Coordinating Committee on Multilateral Export Controls) — a secretive organization that includes the U.S., Japan, Australia and all NATO members except Iceland — said the former Communist countries would be removed from the "Cocom proscribed list" as they are able to demonstrate they can meet Cocom safeguards.

The new forum is intended to move Cocom from an adversarial to a cooperative relationship with the former Soviet bloc nations. It consists of the Cocom members, all the former Communist countries of Eastern Europe, the newly independent states of the former Soviet Union and Mongolia.

"It's fantastic news for U.S. computer companies in that there's a huge opportunity," said Paul Freedenberg, a Washington, D.C., trade consultant and former undersecretary for export administration at the U.S. Department of Commerce. "There's almost unlimited thirst for ... big computers for reservation systems, banking systems and so forth." He also said engineering and software companies in the former Soviet Union are hungry for high-end workstations currently barred for export there.

Cautious enthusiasm

But Freedenberg cautioned U.S. firms not to count their sales until they are hatched, pointing out that many would-be customers lack the hard currency needed to pay for advanced equipment.

Another industry spokesman was unimpressed with the agreement. "It's a much bigger deal from a foreign policy standpoint than it is from the standpoint of how it impacts exporters," said an official at a major large-systems vendor. "The fact is, today, export licenses aren't getting denied for [the former Soviet Union] anyway."

Greg Garcia, manager of international trade at the American Electronics Association (AEA), said the AEA anticipates that the former Soviet republics will move first to a "favorable consideration" status in which export license requests are acted on quickly, then to one in which exports may be reported after the fact and finally to one in which the importing countries enjoy the same status as other major U.S. allies.

Garcia said the AEA had not yet developed market estimates for the region, but, he said, "no doubt it will be a huge market as they move from the 19th century to the 21st century."

Goals of the new Cocom Forum:
- Significantly widen access to advanced Western goods and technology.
- Protect against diversion of sensitive items for military use or unfriendly countries.
- Assist new states in developing export controls.

Wysiwyg

HIGH-TECH EXCUSES

TECH TRIVIA
1. WHAT COMPANY MADE THE W2 FORM A REALITY IN 1943?
2. EGA STANDS FOR ENHANCED GRAPHICS ADAPTER AND VGA STANDS FOR VIDEO GRAPHICS ARRAY. WHAT DOES XGA STAND FOR?
3. WHERE WAS THE C++ LANGUAGE FIRST DEVELOPED?

ANSWERS ➡ 1. IBM. When pounded the typewriter with exploding to-do's. 2. Extended Graphics Array. 3. Bell Laboratories

FOR BREAKING YOUR ARM: "I was in a meeting with the software developers, and I gave them one too many bug reports. The software chief got mad and threw a PC at me. I made the mistake of holding up my arm to block it. The doctor told me that if I kept my arm down and let the PC hit my head, I would not have been injured and the PC would have been totaled."

James Landau,
support contractor
Pete Recigno
Federal Aviation Administration
Atlantic City Airport, N.J.

DID YOU KNOW?

A picosecond is shorter than a nanosecond (a trillionth vs. a billionth of a second, respectively).

Source: Digital at Work; Snapshots from the First Thirty-Five Years (Digital Press)

A cost-effective productivity tool — NOT!

The first successful word processing program, dubbed the "Expensive Typewriter," enabled a $120,000 PDP-1 computer to do work almost as well as a $200 electric typewriter.

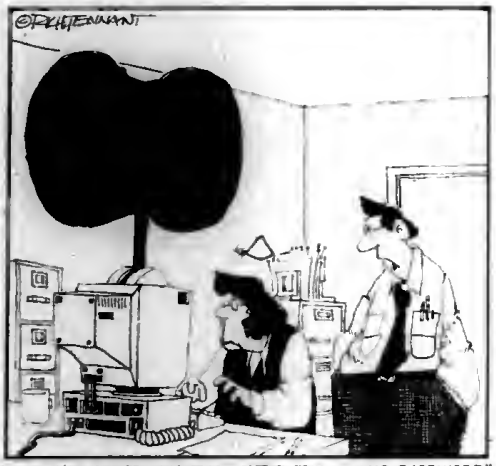
SUGGESTED NAME CHANGE IF THE ASK GROUP MERGED WITH ANSWER COMPUTER:

[redacted]

Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Dix or Jodie Naze at (800) 343-6474. If we use your ideas, we'll send you a gift.

CW Chart: Stephanie Faucher

The Fifth Wave



"OH YEAH, AND TRY NOT TO ENTER THE WRONG PASSWORD."

Inside Lines

Building MacWindows

Microsoft will join in the fun at next month's MacWorld Expo in San Francisco with a different twist: a conference for Macintosh software developers interested in programming for the Windows platform. The software giant will hold the programming conference in San Jose, Calif., on Jan. 11 and 12, which will be just a few days after the MacWorld show draws tens of thousands of programmers to San Francisco. Microsoft officials claim they're not guilty of poaching — they're just interested in helping out in a little cross-platform development, that's all.

Sowing the seeds

Apple plans some exciting new introductions for its PowerBook line in the next few months. Look for a color model, which could be unveiled as early as next month's MacWorld, though it is more likely to have its debut at MacWorld in Japan in February. In October, the company revamped the hugely popular line with three upgraded machines.

No yoking!

Gateway 2000 may be looking to move beyond its direct response channel. Sources say the company is displaying its Handbook computer in a Chicago-area Egghead Discount Software store and has plans to display, but not sell, more products in Egghead stores if it likes the response it gets.

Back to earth

Dell's Dimension line seems to be giving the company some manufacturing and sales headaches. While the firm says its relationship with Dimension manufacturer SCI is solid after a shaky beginning in production, some say Dell may bring production in-house. Dell recently discontinued a program in which some customers were given the Dell P desktop family at the same price as Dimension when they requested Dimension machines. One analyst said this cost Dell a point in its gross operating margins. A Dell spokesman said the program was started informally when there was a two-month wait for Dimension computers; it has been discontinued because Dimension is down to a one-week backlog.

Hacker beware

The word in the computer underground is to brace yourself for Operation Sundevil II, a repeat of the dragnet that Secret Service agents launched two years ago against suspected electronic bandits, in recent weeks, law enforcement officials have once again turned up the heat on suspected system crackers and have even gone as far as breaking up a gathering of computer enthusiasts at a mall in suburban Washington, D.C. The first Operation Sundevil swept through 14 cities and shut down several on-line bulletin boards, while seizing 40 computers and 23,000 floppy disks.

Brother, can you spare a dime?

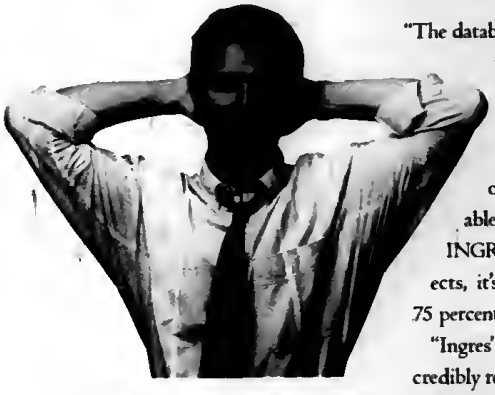
The Digital Equipment Computer Users Society (DECUS) is working under a deficit resulting primarily from lower attendance rates at this week's user conference and is cutting back annual expenditures by $650,000, according to DECUS sources. Services being cut back include a newsletter. Special interest groups may also be affected, the sources said. In addition, the DECUS board is considering charging membership fees.

Outsourcing companies ritualistically describe themselves as their clients' partners, and occasionally, that means they'll venture into providing nontraditional services. Case in point: Electronic Data Systems has won a commitment from its largest customer, General Motors, under which GM must notify EDS of any non-data-processing work for which it is seeking bids. EDS is already vying for the job of managing GM's pension fund and is eyeing a contract to publish technical publications and owner manuals. Got any news tips? Phone, fax or CompuServe News Editor Alan Alper at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's *24-hour voice-mail tip line at (508) 820-8555.*

Why Ingres can cut your applications development time by 60%.

Imagine an application that took two years just to prototype. Now imagine creating the fully functional version in only three months. That's what one of our customers did using Ingres' extraordinary development tools.

First, there's INGRES/Vision.™ It gives you a visual interface and 4GL code-generating technology that actually writes code for you. Next, there's INGRES/Windows4GL,™ which lets you create graphical client-server applications by simply pointing and clicking. That cuts development time by an average of 60%.



Anders Nicolausson, National Systems Manager, Construction Market Data, Inc., 250 employees in 15 U.S. offices.

"The database we collect, massage, and manipulate to generate reports for clients *is* our business. The demand for new applications obviously is intense. I've been able to meet that demand with INGRES/Vision. On many projects, it's cut development time by 75 percent.

"Ingres' technical support is also incredibly responsive. No matter when I call, their support engineers always call back right away."

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Since its beginnings at U.C. Berkeley, Ingres has built a strong record of technological leadership. As Marilyn Bohl, Senior V.P. for Worldwide Engineering, explains, "Ingres has a long history of firsts. Furthermore, we have gone far beyond simply pioneering new database and tools technologies. We translate our technology into practical, useful products like INGRES/Vision and INGRES/Windows4GL.

"By focusing on the underlying architecture of the database and how to achieve optimal connectivity to it, Ingres is able to maximize the power and performance of open systems, and to provide the best possible framework for your move toward client-server computing. The result is a system architecture that mirrors the way your business works, and solves business problems."

Technological Innovation	
1983	First client-server RDBMS
1985	First RDBMS-4GL integration
1986	First database gateway
1987	First transparent distributed RDBMS
1988	First UNIX DBMS to break 100 TPS
1989	First intelligent database, object support
1990	First RDBMS with automatic two-phase commit
1990	First RDBMS-graphical, OO 4GL integration
1991	First production-quality 4GL generator
1991	First SQL-based event alerters

If you'd like to know more about the effect Ingres can have on your productivity, call **1-800-4-INGRES**. Within Latin America, call **1-305-789-6685.**

GA-1175

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The Seahawks, a pioneer in bringing sports franchise operations on line, made a decision to move their proprietary database to a flexible UNIX system. The new system had to store and track vast amounts of data, including statistics on virtually every football player on a college or professional level worldwide. The system had to be technically sophisticated, comprehensive, and easy to use by front office and coaching staff alike.

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The Informix database tracks player statistics from college through professional football. Seattle scouts use laptops in the field and download their reports directly into the central database over phone lines.

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